Student Program Information

ICT50220 Diploma of Information Technology (Advanced Programming)

This qualification comes from a training package created 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 moderately complex problem-solving skills and effective communication with others, specialising in software development.

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

> applying intermediate and advanced programming skills

> managing data and building advanced user interfaces to manage organisational requirements.

Employment Opportunities

> Analyst programmer support

> Assistant programming developer

> Assistant software applications programmer

> Assistant software developer

> Database support programmer

> Web support programmer

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

Course Admission Requirements

> Certificate IV in Information Technology (Programming)

If you do not have a Certificate IV in Information Technology (Programming) 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 (Programming) can be found here:
ICT40120 Certificate IV in Information Technology (Programming)

Incidentals

You will be required to provide your own access to the following hardware. This hardware costs approximately $300.00.

> 1TB SSD portable hard drive,

> webcam and

> headset with microphone.

*No additional costs if students have purchased Certificate IV incidentals.

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Software

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

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. It is recommended that you have the following as a minimum.

> Intel i5 CPU (or equivalent AMD), (Intel i7, preferred)

> 16GB of RAM, (32GB, preferred)

> 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

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National Code: ICT50220 TAFE SA Code: TP01268

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	Training Package Core /Specialist Elective /Elective	Assumed knowledge & skills
ICTPRG441	Apply skills in object-oriented design	Elective	
ICTPRG430	Apply introductory object-oriented language skills	Elective	
ICTPRG547	Apply advanced programming skills in another language	Specialist Elective	ICTPRG441, ICTPRG430
ICTPRG553	Create and develop REST APIs	Listed Elective	
ICTDBS507	Integrate databases with websites	Listed Elective	
ICTWEB514	Create dynamic web pages	Listed Elective	
ICTDBS506	Design databases	Listed Elective	
ICTICT517	Match ICT needs with the strategic direction of the organisation	Core	
BSBXTW401	Lead and facilitate a team	Core	
ICTICT532	Apply IP, ethics, and privacy policies in ICT environments	Core	
BSBXCS402	Promote workplace cyber security awareness and best practices	Core	
ICTSAS527	Manage client problems	Core	

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Units of Competency (listed in delivery sequence)			
Unit Code	**Unit Title**	**Training Package Core /Specialist Elective /Elective**	**Assumed knowledge & skills**
ICTPRG554	Manage data persistence using noSQL data stores	Specialist Elective	
ICTPRG556	Implement and use a model view controller framework	Specialist Elective	ICTPRG430
ICTPRG535	Build advanced user interfaces	Specialist Elective	
ICTPRG536	Design application architecture	Listed Elective	ICTPRG441
ICTSAD508	Develop technical requirements for business solutions	Listed Elective	ICTPRG441
ICTPRG614	Create cloud computing services	Listed Elective	ICTPRG547
ICTPRG549	Apply intermediate object- oriented language skills	Specialist Elective	ICTPRG430
BSBCRT512	Originate and develop concepts	Core	

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TAFE SA Study Plan for Full-Time Students (12 months)

The following table shows the recommended study plan for the Diploma of Information Technology (Advanced Programming). Each stage is one semester (or 6 months) in length for Full-Time student. Codes in brackets are the IT Subject names which are described in the Subject table that follows.

Stage 1	
Term 1	**Term 2**
ICTPRG547 (PRG547CSA) (2)	
ICTPRG553 (PRG553RST) (2)	
ICTDBS507, ICTWEB514 (WEB5C2EWD) (2)	
ICTDBS506 (DBS506MSQ) (2)	
ICTICT517 (ICT517) (2)	
BSBXTW401 * (XTW401) (2)	**ICTICT532 *** (ICT532) (2)
BSBXCS402 * (XCS402) (2)	**ICTSAS527 *** (SAS527) (2)
IT Practical (6)	**IT Practical (6)**
20 hours / week	**20 hours / week**

Stage 2	
Term 1	**Term 2**
ICTPRG554 (PRG554MDB) (2)	
ICTPRG556 (PRG556JAW) (2)	
ICTPRG535 (PRG535IOS) (2)	
ICTPRG536, ICTSAD508 (PRG5C2AUP) (2)	
ICTPRG614 (PRG614AWS) (2)	
ICTPRG549 (PRG549JAM) (2)	
BSBCRT512* (CRT512) (2)	
IT Practical (6)	**IT Practical (8)**
20 hours / week	**20 hours / week**

Please Note: This program structure is subject to change.

Legend:

* Competencies delivered online are marked with an asterisk

( ) 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 15-20 hours per week would be required outside of class time to complete activities and assessments.

ICTPRG441 and ICTPRG430 have already been completed in the Certificate IV in Information Technology (Programming) and are not included in this plan.

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Study Plan for Part-Time Students (24 months)

The following table shows the recommended study plan for studying the Certificate IV in Information Technology (Programming) 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. For students who have completed the Certificate IV in Information Technology (Programming), the units ICTPRG441 and ICTPRG430 have already been completed.

Stage 1	
Term 1	**Term 2**
ICTPRG547 (PRG547CSA) (2)	
ICTPRG553 (PRG553RST) (2)	
BSBXTW401 * (XTW401) (2)	**ICTICT532 *** (ICT532) (2)
IT Practical (4)	**IT Practical (4)**
10 hours / week	**10 hours / week**

Stage 2	
Term 1	**Term 2**
ICTDBS507, ICTWEB514 (WEB5C2EWD) (2)	
ICTDBS506 (DBS506MSQ) (2)	
ICTICT517 (ICT517) (2)	
IT Practical (4)	**IT Practical (4)**
10 hours / week	**10 hours / week**

Stage 3	
Term 1	**Term 2**
ICTPRG554 (PRG554MDB) (2)	
ICTPRG614 (PRG614AWS) (2)	
ICTPRG556 (PRG556JAW) (2)	
BSBXCS402 * (XCS402) (2)	**ICTSAS527 *** SAS527 (2)
IT Practical (2)	**IT Practical (2)**
10 hours / week	**10 hours / week**

Stage 4	
Term 1	**Term 2**
ICTPRG535 (PRG535IOS) (2)	
ICTPRG549 (PRG549JAM) (2)	
ICTPRG536, ICTSAD508 (PRG5C2AUP) (2)	
BSBCRT512* (CRT512) (2)	
IT Practical (2)	**IT Practical (4)**
10 hours / week	**10 hours / week**

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Please Note: This program structure is subject to change.

Legend:

* Competencies delivered online are marked with an asterisk

( ) 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.

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

NOTE:

The study plan is for a part-time student with class-attendance. This is usually 10-12 hours a week of attendance. It is expected that an additional 10-15 hours per week would be required outside of class time to complete activities and assessments.

ICTPRG441 and ICTPRG430 have already been completed in the Certificate IV in Information Technology (Programming) and are not included in this plan.

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, **PRG430JAB** indicates that the content for delivery of unit ICT**PRG430** will include coverage of Java Basics (**JAB**).

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
ICTPRG430	**PRG430JAB**	This unit describes the skills and knowledge required to undertake programming tasks using the object-oriented programming language **Java**, including tool usage, documentation, debugging and testing techniques. Topics include creating and testing basic classes, aggregation, inheritance, polymorphism, arrays, text and binary files. NetBeans is used as the development environment.
ICTPRG441	**PRG441UML**	This unit describes the skills and knowledge required to produce an object-oriented design from specifications, applying the cyclic process of iteration from identification of class, instance, role and type to the final object-oriented model of the application using **UML**. This unit covers sequence, activity and state diagrams. An Agile approach with SCRUM is used in conjunction with OO development methodologies. It applies to those who are required to design systems using an object-oriented method.
ICTPRG547	**PRG547CSA**	This unit describes the skills and knowledge required to undertake advanced level programming tasks using another programming language. The language used is **C#.NET**. It applies to software developers who are required to program code.
ICTPRG553	**PRG553RST**	This unit describes the skills and knowledge required to create and implement representational state transfer (**REST** or RESTful) application program interfaces (APIs) in order to request and manipulate data from data sources.
ICTDBS507	**WEB5C2EWD**	This unit describes the skills and knowledge required to produce both server and client-side content for web pages for **eCommerce web design**.
ICTWEB514	**WEB5C2EWD**	It applies to individuals working as web developers, who are responsible for creating dynamic pages to provide interaction between the user and the website. They use highly developed technical and analytical skills when developing the user-website interface, particularly for **eCommerce web design**.
ICTDBS506	**DBS506MSQ**	This unit describes the skills and knowledge required to establish client needs and technical requirements and to design a database using **SQL** that meets identified

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		requirements.
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. It applies to individuals whose responsibilities may include improving, evaluating, acquiring, maintaining and supporting ICT for organisations.
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.
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.
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.
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.
ICTPRG554	**PRG554MDB**	This unit describes the skills and knowledge required to implement a data store and manage data persistence using non structured query language (NoSQL) **MongoDB** to provide automatic scaling as well as high performance and availability over semi-structured data.
ICTPRG556	**PRG556JAW**	This unit describes the skills and knowledge required to use a model view controller (MVC) framework within a development environment that creates and develops dynamic web architecture by convention in any language. This unit covers **Java** development for web applications. The unit applies to those working as senior software developers, senior back-end developers or full stack developers, and responsible for managing Information and Communications Technology (ICT) in small-to-large enterprises (SMEs).
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.

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ICTPRG535	**PRG535IOS**	This unit describes the skills and knowledge required to design, build and test an advanced user interface (UI), including interaction techniques, rich controls, improved client-side validation, customisation and personalisation, graphics and multimedia. This unit covers mobile development for mac **iOS**. It applies to individuals who work as user-interface designers and software developers and are responsible for managing and implementing complex UI design.
ICTPRG614	**PRG614AWS**	This unit describes the skills and knowledge required to design, build, test and deploy web services and cloud computing applications to specifications using **AWS** (Amazon Web Services). It applies to individuals in software engineering roles with the Information and Communications Technology (ICT) skills required to create and install web services and cloud computing applications.
ICTPRG536	**PRG5C2AUP**	This unit describes the skills and knowledge required to design the structure of software or systems components, and how they interact using **Agile Unified Process**. It applies to those who work as software architects, developers, designers, software engineers or programmers, and responsible for designing, and building, solution architecture.
ICTSAD508	**PRG5C2AUP**	This unit describes the skills and knowledge required to develop technical and related requirements that will enable business solutions to be implemented in an organisation using **Agile Unified Process**. It applies to individuals responsible for performing complex technical analysis to complete a range of tasks and provide solutions to complex problems.
ICTPRG549	**PRG549JAM**	This unit describes the skills and knowledge required to undertake intermediate level programming tasks using an object-oriented programming language. This unit covers developing for mobile applications in Android Studio – **Java mobile**. It applies to software developers in a variety of fields who are required to produce programs in object-oriented languages.

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