



Australian Government

ICT50220 Diploma of Information Technology

Release 2

ICT50220 Diploma of Information Technology

Modification History

Release	Comments
Release 2	<p>This version first released with ICT Information and Communications Technology Training Package Version 8.0.</p> <ul style="list-style-type: none"> 12 newly created units of competency were added to <i>Group O General Electives</i>. 16 units of competency have been replaced with their relevant superseding unit. <p>The following unit of competency was updated with minor editorial corrections:</p> <ul style="list-style-type: none"> ICTWEB433 Confirm accessibility of websites.
Release 1	<p>This version first released with ICT Information and Communications Technology Training Package Version 7.0.</p>

Qualification Description

This qualification reflects the role of individuals in a variety of information and communications technology (ICT) roles who have established specialised skills in a technical ICT function.

Individuals in these roles carry out moderately complex tasks in a specialist field, working independently, as part of a team or leading a deliverable with others. They may apply their skills across a wide range of industries, business functions and departments, or as a business owner (sole trader/contractor).

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

- advanced networking: configuring and managing virtual computing environments, and security within ICT networks
- advanced programming: applying intermediate and advanced programming skills, managing data and building advanced user interfaces to manage organisational requirements
- back end web development: developing and maintaining website information architecture and data
- business analysis: designing and implementing technical requirements, quality assurance processes and contingency plans for businesses
- cloud architecture: developing, improving and designing cloud infrastructure, including disaster recovery plans

- cloud engineering: building, implementing and managing cloud infrastructure and virtual networks
- cyber security: protecting sensitive data and information through security architecture and developing disaster recovery and contingency plans
- database and data management: creating, designing and monitoring systems that store data and optimise organisational knowledge management
- front end web development: designing dynamic and complex websites, user experience solutions and documents using extensible mark-up languages
- game art and design: creating complex 2D and 3D modelling and animation software through scripts and storyboards
- game programming: creating complex 2D and 3D interactive games and media, building graphical user interfaces and applying artificial intelligence in game development
- systems administration: reviewing maintenance procedures and support to help troubleshoot system applications
- systems analysis: modelling and testing data objects, data processes and preferred ICT system solutions
- telecommunications network engineering: managing logistics, organisational specifications, regulations and legislative requirements across network projects.

Licensing, legislative, regulatory or certification considerations

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil

Packaging Rules

Total number of units = 20

6 core units plus

14 elective units, of which:

- at least 10 units must be selected from the elective units listed below
- up to 4 units may be selected from the remaining listed elective units or from this or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualification Framework (AQF) Level 4, 5 or 6 qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Where relevant, the choice of elective units set out in the packaging rules above can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed at the qualification end.

- Advanced networking
- Advanced programming
- Back end web development
- Business analysis
- Cloud architecture
- Cloud engineering
- Cyber security
- Database and data management
- Front end web development
- Game art and design
- Game programming
- Systems administration
- Systems analysis
- Telecommunications network engineering.

Core units

BSBCRT512 Originate and develop concepts

BSBXCS402 Promote workplace cyber security awareness and best practices

BSBXTW401 Lead and facilitate a team

ICTICT517 Match ICT needs with the strategic direction of the organisation

ICTICT532 Apply IP, ethics and privacy in ICT environments

ICTSAS527 Manage client problems

Elective units

Group A Advanced Networking Specialisation

ICTNWK529 Install and manage complex ICT networks

ICTNWK536 Plan, implement and test enterprise communication solutions

ICTNWK540 Design, build and test network servers

ICTNWK546 Manage network security

ICTNWK557 Configure and manage advanced virtual computing environments

ICTNWK559 Install an enterprise virtual computing environment

Group B Advanced programming specialisation

ICTPRG535 Build advanced user interfaces

ICTPRG547 Apply advanced programming skills in another language

ICTPRG549 Apply intermediate object-oriented language skills

ICTPRG554 Manage data persistence using noSQL data stores

ICTPRG556 Implement and use a model view controller framework

Group C Back end web development specialisation

ICTDBS507 Integrate databases with websites

ICTPRG553 Create and develop REST APIs

ICTPRG554 Manage data persistence using noSQL data stores

ICTWEB522 Develop website information architecture

ICTWEB525 Implement quality assurance process for websites

Group D Business analysis specialisation

ICTSAD507 Design and implement quality assurance processes for business solutions

ICTSAD508 Develop technical requirements for business solutions

ICTSAD509 Produce ICT feasibility reports

ICTSAS502 Establish and maintain client user liaison

ICTSAS526 Review and update disaster recovery and contingency plans

Group E Cloud architect specialisation

ICTCLD501 Develop cloud disaster recovery plans

ICTCLD502 Design and implement highly-available cloud infrastructure

ICTCLD503 Implement web-scale cloud infrastructure

ICTCLD504 Improve cloud-based infrastructure

Group F Cloud engineer specialisation

ICTCLD505 Implement cloud infrastructure with code

ICTCLD506 Implement virtual network in cloud environments

ICTCLD507 Build and deploy resources on cloud platforms

ICTCLD508 Manage infrastructure in cloud environments

Group G Cyber security specialisation

ICTCYS407 Gather, analyse and interpret threat data

ICTCYS610 Protect critical infrastructure for organisations

ICTCYS613 Utilise design methodologies for security architecture

ICTSAS524 Develop, implement and evaluate an incident response plan

ICTSAS526 Review and update disaster recovery and contingency plans

Group H Database and data management specialisation

ICTDBS503 Create a data warehouse

ICTDBS505 Monitor and improve knowledge management systems

ICTDBS506 Design databases

ICTDBS507 Integrate databases with websites

ICTSAD502 Model data processes

Group I Front end web development specialisation

ICTICT530 Design user experience solutions

ICTWEB513 Build dynamic websites

ICTWEB514 Create dynamic web pages

ICTWEB518 Build a document using extensible markup language

ICTWEB519 Develop complex web page layouts

ICTWEB520 Develop complex cascading style sheets

Group J Game art and design specialisation

ICTGAM539 Create and implement designs for 3-D games environments

ICTGAM542 Animate 3-D characters for digital games

ICTGAM543 Produce digital animation sequences

ICTGAM545 Manage technical art and rigging in 3-D animations

ICTGAM552 Create complex 3-D characters for games

Group K Game programming specialisation

ICTGAM423 Apply artificial intelligence in game development

ICTGAM533 Create complex 3-D interactive games

ICTGAM535 Develop complex 3-D software for games and interactive media

ICTGAM537 Prepare games for different platforms and delivery modes

ICTICT433 Build graphical user interfaces

Group L Systems administration specialisation

ICTNWK615 Design and configure desktop virtualisation

ICTSAS512 Review and manage delivery of maintenance services

ICTSAS518 Install and upgrade operating systems

ICTSAS524 Develop, implement and evaluate an incident response plan

Group M Systems analysis specialisation

ICTNWK548 Model preferred system solutions

ICTSAD501 Model data objects

ICTSAD502 Model data processes

ICTSAS506 Update ICT system operational procedures

ICTSAS520 Develop detailed test plans

Group N Telecommunications network engineering specialisation

ICTICT519 Develop detailed component specifications from project specifications

ICTNPL413 Evaluate networking regulations and legislation for the telecommunications industry

ICTNWK423 Manage network and data integrity

ICTNWK541 Configure, verify and troubleshoot WAN links and IP services

ICTPMG505 Manage ICT projects

ICTTEN519 Design network building projects

Group O General electives

Advanced IT Support

ICTICT518 Research and review hardware technology options for organisations

ICTICT520 Confirm transition strategy for new systems

ICTICT521 Select new technology supported business model

ICTICT524 Determine ICT strategies and solutions for organisations
ICTICT525 Identify and manage the implementation of industry specific technologies
ICTICT526 Verify client business requirements
ICTICT528 Deploy smart contracts
ICTICT533 Conduct quality audit of IT system design specifications
ICTSAS519 Perform systems tests
ICTSAS521 Perform integration tests
ICTSAS522 Manage the testing process
ICTSAS523 Perform stress and load tests on integrated platforms
ICTSAS528 Review and develop ICT maintenance strategies
ICTSAS529 Prioritise ICT change requests
ICTSAS530 Use network tools

Artificial Intelligence

ICTAII401 Identify opportunities to apply artificial intelligence, machine learning and deep learning
ICTAII501 Automate work tasks using machine learning
ICTAII502 Train and evaluate machine learning models
ICTAII503 Build natural language processing models and pipelines

Automation

ICTAUT501 Manage robotic process automation

Blockchain Solutions

ICTICT527 Develop and maintain blockchain solutions

Business Management

BSBPMG537 Manage project procurement
ICTICT435 Create technical documentation
ICTICT443 Work collaboratively in the ICT industry
ICTICT523 Gather data to identify business requirements
PSPPCM023 Manage strategic contracts
ICTSAD510 Manage risks when implementing new technologies

Cloud Computing

ICTCLD509 Manage cloud identity and access
ICTCLD510 Manage cloud threat detection systems
ICTCLD511 Protect cloud infrastructure and data
ICTCLD512 Respond to cloud security incidents
ICTCLD513 Develop cloud-based microservices architecture using containers
ICTCLD514 Create and test cloud-based serverless applications
ICTCLD515 Build and deploy cloud-based applications using CI and CD pipelines

Data Engineering

ICTDAT501 Gather, analyse and verify data from different source inputs

ICTDAT502 Conduct significance tests

ICTDAT503 Use unsupervised learning for clustering

Design

CUADIG512 Design digital applications

CUADIG513 Design e-learning resources

CUADIG517 Design digital simulations

CUAPHI524 Prepare digital images

Digital Media

CUAPOS411 Edit digital content for fast turnaround

CUASOU417 Edit sound

CUASOU504 Produce sound recordings

ICTDMT407 Incorporate video assets into media presentations

Gaming Development

ICTGAM532 Create design concepts for digital games and 3-D media

ICTGAM534 Manage interactive media productions

ICTGAM536 Design interactive 3-D applications for scientific and mathematical modelling

ICTGAM538 Manage testing of games and interactive media

ICTGAM540 Design and create models for 3-D and digital effects environments

ICTGAM541 Design and create advanced particles, fluids and bodies for 3-D digital effects

ICTGAM544 Animate physical attributes of models and elements

ICTGAM546 Create and combine 3-D digital games and components

ICTGAM547 Create interactive 3-D environments for digital games

ICTGAM548 Complete digital editing for 3-D and digital effects environments

ICTGAM549 Collaborate in design of 3-D game levels and environments

ICTGAM550 Integrate multiple data sources into interactive 3-D environments

ICTGAM551 Apply digital texturing for the 3-D environment in digital games

ICTGAM553 Integrate databases with online games

ICTGAM554 Create games for mobile devices

ICTGAM555 Analyse business opportunities in the digital games environments

ICTGAM556 Develop and implement physics in 3-D digital games

ICTGAM557 Complete compositing to create elements for 3-D and digital effects environments

Internet of Things

ICTIOT501 Install IT devices and networks

ICTIOT502 Program IoT devices

ICTIOT503 Design and test IoT devices and networks

Networking

ICTNWK537 Implement secure encryption technologies
ICTNWK538 Install and maintain valid authentication processes
ICTNWK539 Design and implement integrated server solutions
ICTNWK541 Configure, verify and troubleshoot WAN links and IP services
ICTNWK542 Install, operate and troubleshoot medium enterprise routers
ICTNWK543 Install, operate and troubleshoot medium enterprise switches
ICTNWK544 Design and implement a security perimeter for ICT networks
ICTNWK545 Develop, implement and evaluate systems and applications security
ICTNWK547 Manage system security on operational systems
ICTNWK549 Design ICT security frameworks
ICTNWK550 Design ICT system security controls
ICTNWK551 Build decks using wireless markup language
ICTNWK552 Install and configure network access storage devices
ICTNWK553 Configure enterprise virtual computing environments
ICTNWK554 Manage enterprise virtual computing environments
ICTNWK556 Identify and resolve network problems
ICTNWK558 Monitor and troubleshoot virtual computing environments
ICTNWK560 Determine best-fit topologies for wide area networks
ICTNWK561 Design enterprise wireless local area networks
ICTNWK562 Configure internet gateways
ICTNWK623 Manage ICT security

Programming

ICTPRG530 Manage projects using software management tools
ICTPRG531 Prepare for application development using current methods
ICTPRG532 Apply advanced object-oriented language skills
ICTPRG533 Debug and monitor applications
ICTPRG534 Deploy applications to production environments
ICTPRG536 Design application architecture
ICTPRG537 Implement security for applications
ICTPRG538 Create mashups
ICTPRG540 Maintain custom software
ICTPRG541 Monitor and support data conversion to new ICT systems
ICTPRG542 Review developed software
ICTPRG543 Develop integration blueprint for ICT systems
ICTPRG544 Install, test and evaluate pilot version of ICT systems
ICTPRG545 Monitor system pilots
ICTPRG548 Develop high-level object-oriented class specifications
ICTPRG550 Perform ICT data conversions
ICTPRG555 Implement object relational mapping framework for data persistence

ICTPRG557 Develop applications using agile methods

ICTPRG603 Develop advanced mobile multi-touch applications

Project Management

BSBPMG532 Manage project quality

BSBPMG536 Manage project risk

BSBPMG539 Manage project governance

ICTICT529 Organise and lead agile projects

ICTPMG505 Manage ICT projects

Systems and Software Design

ICTPRG546 Validate application designs against specifications

ICTPRG551 Apply testing techniques for software development

Telecommunications Network Engineering General

ICTICT531 Test network using virtual instruments

ICTPMG402 Schedule installation of customer premises equipment

ICTPMG506 Prepare network project briefs

ICTPRG605 Manage development of technical solutions from business specifications

ICTSAS525 Develop and conduct client acceptance tests

ICTSUS502 Install and test virtual infrastructure

ICTTEN426 Design network projects

ICTTEN520 Commission network equipment

ICTTEN521 Integrate network systems and equipment

ICTTEN522 Cut over new and replacement network equipment

ICTTEN523 Locate, diagnose and rectify complex system equipment faults

ICTTEN524 Diagnose and organise repair of complex equipment faults

ICTTEN525 Install, configure and test local area network switches

ICTTEN526 Dimension and design a radio frequency identification system

ICTTEN527 Plan wireless mesh networks

UEPOPS423 Plan a scheduled outage

Telecommunications Network Engineering Networking

ICTNWK555 Determine best-fit topologies for local networks

ICTNWK628 Design and build integrated VoIP networks

Telecommunications Network Engineering Optical Networks

ICTOPN507 Plan and configure dense wavelength division multiplexing optical networks

ICTOPN508 Perform acceptance and commissioning tests on optical networks

ICTOPN509 Plan for optical system upgrades

ICTOPN510 Test and commission dense wavelength division multiplexing transmission systems

ICTOPN511 Test performance of specialised optical devices

ICTOPN512 Analyse and integrate specialised optical devices

Telecommunications Network Engineering Radio Communications

ICTCMP502 Conduct radio communications site audits

ICTRFN504 Test cellular handset enhancements and international roaming agreements

ICTRFN505 Test and measure cellular phone and network equipment performance

ICTRFN506 Evaluate radio frequency signal coverage plots

ICTRFN603 Monitor the capacity of and recommend changes to cellular mobile networks

Web Design and Development

ICTWEB441 Produce basic client-side script

ICTWEB452 Create a markup language document

ICTWEB517 Create web-based programs

ICTWEB521 Customise complex ICT content management systems

ICTWEB523 Manage transactions using site server tools

ICTWEB524 Analyse information and assign meta tags

ICTWEB526 Implement and use web services

ICTWEB527 Research and apply emerging web technology trends

Specialisations

As stated above, where relevant, the choice of elective units set out in the packaging rules at qualification outset can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed below.

The achievement of more than one specialisation may be indicated on the same testamur as follows:

- ICT50220 Diploma of Information Technology (Advanced Networking)
- ICT50220 Diploma of Information Technology (Advanced Programming)
- ICT50220 Diploma of Information Technology (Back End Web Development)
- ICT50220 Diploma of Information Technology (Business Analysis)
- ICT50220 Diploma of Information Technology (Cloud Architecture)
- ICT50220 Diploma of Information Technology (Cloud Engineering)
- ICT50220 Diploma of Information Technology (Cyber Security)
- ICT50220 Diploma of Information Technology (Database and Data Management)
- ICT50220 Diploma of Information Technology (Front End Web Development)
- ICT50220 Diploma of Information Technology (Game Art and Design)
- ICT50220 Diploma of Information Technology (Game Programming)
- ICT50220 Diploma of Information Technology (Systems Administration)
- ICT50220 Diploma of Information Technology (Systems Analysis)
- ICT50220 Diploma of Information Technology (Telecommunications Network Engineering).

Packaging rules to achieve a specialisation

Advanced Networking

- Select all 6 elective units from Group A Advanced networking specialisation

Advanced Programming

- Select all 5 elective units from Group B Advanced programming specialisation

Back End Web Development

- Select all 5 elective units from Group C Back end web development specialisation

Business Analysis

- Select all 5 elective units from Group D Business analysis specialisation

Cloud Architecture

- Select all 4 elective units from Group E Cloud architect specialisation

Cloud Engineering

- Select all 4 elective units from Group F Cloud engineers specialisation

Cyber Security

- Select all 5 elective units from Group G Cyber security specialisation

Database and Data Management

- Select all 5 elective units from Group H Database and data management specialisation

Front End Web Development

- Select all 6 elective units from Group I Front end web development specialisation

Game Art and Design

- Select all 5 elective units from Group J Game art and design specialisation

Game Programming

- Select all 5 elective units from Group K Game programming specialisation

Systems Administration

- Select all 4 elective units from Group L Systems administration specialisation

Systems Analysis

- Select all 5 elective units from Group M Systems analysis specialisation

Telecommunications Network Engineering

- Select all 6 elective units from Group N Telecommunications network engineering specialisation.
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Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to:

- ICT50120 Diploma of Information Technology
- ICT51015 Diploma of Telecommunications Engineering
- ICT51115 Diploma of Telecommunications Planning and Design.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>