



COMPUTING

Unit standards
Review 2021

Review Panel Background and Reference Brief

November 2020

Contents

Background information	2
Usage overview	3
Links with other reviews	4
Project goal	4
Project scope	4
Indicative timeframes	5
Resources and key documents	5
Roles and responsibilities	6
Responsibilities of review panel members	6

Appendices

Appendix 1: Scope of review - Computing unit standards Levels 1 - 5	8
Appendix 2: Computing unit standards usage 2016 - 2020	12
Appendix 3: Computing unit standards in programmes for NZ qualifications	17
Computing standards in programmes for Level 2-4 NZ Computing and IT qualifications	17
NZ qualifications with computing standards in programmes	17
List of computing standards in programmes for any NZ qualification	19
Computing standards NOT in programmes for any NZ qualification	20
Appendix 4: Original and reviewed Computing qualification GPOs and associated unit standards	22
Level 2 – NZ Certificate in Computing (User Fundamentals) 2591/ NZ Certificate in Computing (Foundation user) 4132 versions 1	22
Level 3 – NZ Certificate in Computing (Intermediate User) 2592 versions 1 & 2.....	25
Level 4 – NZ Certificate in Computing (Advanced User) 2593 versions 1 & 2.....	28
Level 4 – NZ Certificate in IT Essentials 2594 versions 1 & 2.....	31
Appendix 5: Unit standard template (updated)	34
Appendix 6: Guidelines for listing assessment standards on the DAS (extract)	36
Approval and listing standards on the Directory of Assessment Standards	36
Changes to assessment standards: includes ERs-PC, ENs-Guidance Info	36
Reviewing standards (Categories of change A, B, C, D).....	39
Quality assurance – evaluative approach	40
Appendix 7: NZQF Level Descriptors extract	41
Appendix 8: Achievement standards – Technology Matrix	42

Background information

NZQA National Qualifications Service (NQS) is reviewing the suite of 75 Computing unit standards at Levels 1-5, registered in January 2017 and due for review by 31 December 2021.

Many of the current standards align to meet the requirements of version 1 of the Level 2-4 IT and Computing qualifications listed in April 2015 following the mandatory review of all ICT qualifications at Level 1-6 (MRoQ).

These [qualifications have been reviewed](#) with new versions published in July 2020, including a replacement qualification at Level 2 (increased from 40 to 60 credits).

The computing unit standards need to be reviewed to be maintained, and also to ensure there are standards that align with the reviewed versions of the qualifications:

- NZ Certificate in Computing (User Fundamentals) (Level 2) (40 credits) [Ref: [2591](#)] – *expiring*
- NZ Certificate in Computing (Foundation User) (Level 2) (60 credits) [Ref: [4132](#)]
- NZ Certificate in Computing (Intermediate User) (Level 3) (60 credits) [Ref: [2592](#)]
- NZ Certificate in Computing (Advanced User) (Level 4) (60 credits) [Ref: [2593](#)]
- NZ Certificate in Information Technology Essentials (Level 4) (60 credits) [Ref: [2594](#)]

A suite of new and reviewed **Computing unit standards** was developed to align with the graduate profile outcomes in content and credit value for version 1 of the Computing qualifications. The [landscape of computing unit standards mapped to NZ qualifications at Levels 2-4](#) may provide a useful overview. Appendix 4 provides a comparison of the original and reviewed qualification outcomes, and an extract from the landscape of standards by level.

The intent of this project is to determine whether there is still a need for these seventy-five Computing unit standards, and develop new, review existing or expire standards as appropriate, so that they are:

- fit for purpose and without duplication with other standards
- written with clear intent and likely to facilitate quality assessment
- useful and widely relevant to current and future learners, employers and other stakeholders, and can be justified in the current and future environment
- likely to be used – and allow for a range of approaches to delivery and assessment
- current and up to date, with sound technical quality and on the new template (appendix 5)

An extract from the Guidelines for listing assessment standards on the Directory of Assessment Standards (DAS) is included at appendix 6, and the NZQF Level descriptors are included as appendix 7.

An extract of the outcomes and conditions associated with the original and reviewed qualification GPOs and associated standards is available in Appendix 4.

Usage overview

There have been 92,378 results recorded for the computing unit standards within scope of this review between January 2016 and August 2020 – or 68,897 since 2017 when the current standards were published. Whilst there has been a decline in the use of the computing unit standards since 2016, there are still significant numbers of results recorded annually (over 20,000 pa in 2018 and 2019).

The usage data showing the results reported for the individual standards from January 2016 to August 2020 is shown in appendix 2. Usage figures for the new standards have been increasing as providers transition from the expiring standards.

There has been no usage recorded for six of the standards specific to the Level 4 CITE qualification (29811 – 29812, 29814 – 29817), with some usage of 29810 and 29813 (mainly in schools). There are 17 organisations with programmes approved towards the Ref 2594 qualification, but at this stage don't appear to be using standards in programmes.

Also low usage of 2796, 5943, 6761, 6836, 7910, and 26227 in the past 3 years, and significantly reduced usage of some previously high usage standards (5951, 5955, 5968, 6852, 18750, 25782) as providers transition to the new standards during 2018/19.

Appendix 3 contains information on programmes that include these computing unit standards as assessment tools for NZ qualifications. Findings are summarised below.

- There are 26 NZ qualifications with programmes approved that include one or more computing unit standard (including the four IT and Computing qualifications they were designed for).
- Programmes towards the Foundation skills, Business administration and several Creative arts qualifications include a significant number of computing standards, reinforcing the diverse need for them.
- All standards developed specifically to align with the Levels 2 -4 computing qualifications are included in one or more programme (except 29779), along with some other Level 2, 3 and 5 computing standards
- None of the standards aligned to the NZCITE qual 2594 are in any of the 16 approved programmes.
- 53 computing unit standards are part of 94 programmes approved towards 26 NZ quals – 18 of which are only in one programme. Each of these 53 standards are in programmes towards up to 7 different NZ qualifications.
- There are 22 computing standards not in approved programmes for any NZ qualifications, and the review will consider usage and what other purposes there are for these standards. There are a few standards that may be recommended to expire e.g. 2797, 6761, 7910.

With RoVE, there is some uncertainty around the impact on future usage of standards with the transition to Workforce Development Councils ([WDCs](#)) and [Te Pūkenga](#) (NZ Institute of Skills and Technology) over the coming years. It is considered prudent to maintain a suite of standards that align with the NZ IT and Computing qualifications at levels 2-4 during the transition phase to the proposed Creative, Cultural, Recreation and Technology WDC.

Some programmes approved for other NZ qualifications (22) include computing unit standards. During the review process, this panel may identify a slightly different combination of standards to align with the reviewed qualifications, and as a result the 'landscape' document will also be updated.

Links with other reviews

The review of business administration unit standards aligned to the reviewed Business qualifications is also nearing completion. Details of the current 2020 review are available from <https://www.nzqa.govt.nz/qualifications-standards/standards/nzqa-led-standards-reviews-and-developments/business-administration-unit-standards/>.

Results from the 2019 review of the **'legacy' business administration unit standards** may also inform this review. The [February 2020 change report for this review](#) has full details. The 2019 review resulted in the [expiry of 40](#) unit standards, and lead to [14 reviewed and 8 new](#) standards remaining in the Business administration suite of standards.

The [Foundation and Bridging qualifications](#) are currently being reviewed, and the digital literacy areas may have relevance/overlap with lower level computing standards.

Project goal

The goal of this project is to:

- Review the 75 computing unit standards due for review by December 2021
- Determine whether there is a need for the computing unit standards, and develop new, review existing or expire standards as appropriate to align with the reviewed qualifications and other purposes
- Submit for listing reviewed/new unit standards that can be justified in the new environment.

Project scope

The project scope includes:

- The review is of the following seventy-five (75) current Computing unit standards, many directly linked to the reviewed Computing and IT qualifications at Levels 2-4 (see appendix 1):

Subfield	Domain	ID
Computing	Computer Support	6836, 6852, 18750, 26227, 29784, 29798, 29810, 29817
	Generic Computing	2792, 2796, 2797, 5943, 5946, 5951, 5955, 5968, 6745, 7910, 18734, 18743, 18756, 18758, 25659, 25782, 26226, 26228, 29769-29783, 29785-29797, 29799-29809, 29811, 29812, 29814-29816
	Software Development - Programming	6761, 18739-18741, 29813

- Updating the [landscape of computing unit standards](#) aligned to the qualifications, considering standards from other domains that may be suitable.
 - Level 1: 8 standards (2792, 5943, 5946, 18734, 18739, 18743, 18758, 25669)
 - Level 2: 17 standards (18740, 29769 – 29784)
 - Level 3: 22 standards (2797, 5951, 5955, 5968, 18741, 18750, 18756, 25782, 29785 – 29798)
 - Level 4: 23 standards (2796, 6745, 6852, 26226, 26228, 29799 – 29809/29810 – 29816)
 - Level 5: 5 standards (6761, 6836, 7910, 26227, 29817)

- Considering duplication with other standards e.g. Digital technologies achievement standards, Business Administration standards reviewed 2019-20
- This review excludes the review of eleven current computing standards proposed to expire December 2020 - 2780, 2781, 2784, 2785, 2789, 5940, 5953, 6743, 20332, 24872, 25662.
- Explore future demand of Computing unit standards to determine whether there is an ongoing need to justify keeping the unit standards that are specifically linked to the reviewed Level 2-4 Computing and IT or other NZ qualifications; and whether these or other computing unit standards are needed for other purposes.

Indicative timeframes

Activities	Timelines
Review panel meeting #1 (2 day face-to-face): overview of issues, reviewing standards, 'landscape' of standards aligned to reviewed IT & Computing quals.	30 November – 1 December 2020
Possible distribution to email support network and/or review panels for feedback on intentions/progress	December 2020 - January 2021 (as required after subsequent meetings)
Review panel meeting #2 (2 day face-to-face): continue reviewing standards, updating 'landscape' of standards aligned to reviewed IT & Computing quals.	Mid-late February 2021
Review panel meeting #3-4: finalise review of standards to prepare for sector consultation	March - May 2021
Consultation on reviewed standards – 3 weeks	May - June 2021
Review panel e-meeting (½ day e-meeting if required): to consider feedback and to adjust the standards	July 2021 - if required
Submission to Approvals and Accreditation for quality assurance evaluation	July-August 2021
Review panel e-meeting (if required): to consider feedback from A&A and to adjust the standards	October 2021 – if required

Resources and key documents

Information in the appendices include:

- Appendix 1: Scope of review – Computing unit standards Levels 1-5
- Appendix 2: Computing unit standards usage 2016 – 2020
- Appendix 3: Computing unit standards in programmes for NZ qualifications
- Appendix 4: Original and reviewed qualification GPOs and associated unit standards (*includes other potential unit standard options for Level 2 alignment landscape*)
- Appendix 5: Unit standard template (updated)
- Appendix 6: Guidelines for listing assessment standards on the DAS (extract)
- Appendix 7: NZQF Level Descriptors extract
- Appendix 8: Achievement standards – Technology Matrix

Additional resources and information:

- Resource booklets - current computing unit standard documents, L2 -4 Computing and IT qualification documents, available for each panellist at the meeting
- [Landscape of computing unit standards](#) mapped to version 1 of the NZ qualifications at Levels 2-4 – provides details of computing standards titles and credits by level
- The IT & Computing qualifications review webpage has background information and documents related to the qualifications review and development of new computing standards <https://www.nzqa.govt.nz/qualifications-standards/qualifications/it-computing-quals/>
- The Computing unit standards review webpage has background information and documents related to this project, and previous Computing standards reviews - <https://www.nzqa.govt.nz/qualifications-standards/standards/nzqa-led-standards-reviews-and-developments/computing-unit-standards-review/>
- Reviews of business administration unit standards (for comparison, and to ensure no duplication) - <https://www.nzqa.govt.nz/qualifications-standards/standards/nzqa-led-standards-reviews-and-developments/business-administration-unit-standards/>.
- Quality assurance and listing of assessment standards on the DAS <https://www.nzqa.govt.nz/providers-partners/approval-accreditation-and-registration/list-assessment-stds/>

Roles and responsibilities

- NQS will establish the expert review panel, manage communications, convene and facilitate meetings, and co-ordinate the writing and registration of the unit standards.
- The review panel will provide technical expertise to review the 75 computing unit standards.
- The consultation network will provide feedback on any recommended changes and endorse the draft standards.
- The national moderator will provide advisory on recommended changes to the standards.

Responsibilities of review panel members

The review panel will comprise of people who have:

- subject matter expertise (e.g. practitioner and/or expertise in programme development and/or teaching computing)
- experience in assessment, design and moderation of computing unit standards
- involvement in computing related projects, reviews and programme implementation
- a commitment to the use of unit standards as assessment awards in programmes
- a commitment to open communication, collaborative problem solving, and team work.

The panel will have balanced representation from across the community and education sector.

Review panel members will:

- maintain regular attendance at face-to-face or electronic meetings for the duration of the review;
- respond to communications promptly;
- be prepared and informed, including being familiar with documents before meetings;
- commit to work for the good of the whole sector;

- contribute constructively and openly to the work of the group;
- act professionally at all times;
- maintain the confidentiality of the review panel discussions
- engage as requested with their networks within the IT & computing sector
- consult with National Qualifications Services (NQS) prior to any publication of or about the draft unit standards.

Each member will serve on the review panel until such time as the standards have been approved and listed. NQS may replace resignations in order to ensure panel membership is maintained, and that the criteria for membership and sector representation are honoured. NQS may call on extra expertise as required.

NQS may withdraw panel membership or disestablish the review panel, if an individual or panel has become inactive or ineffective in meeting its purpose.

Appendix 1: Scope of review - Computing unit standards Levels 1 - 5

The project scope includes the review is of the following seventy-five (75) current Computing unit standards, many directly linked to the reviewed Computing and IT qualifications at Levels 2-4:

Subfield	Domain	ID
Computing	Computer Support	6836, 6852, 18750, 26227, 29784, 29798, 29810, 29817
	Generic Computing	2792, 2796, 2797, 5943, 5946, 5951, 5955, 5968, 6745, 7910, 18734, 18743, 18756, 18758, 25659, 25782, 26226, 26228, 29769-29783, 29785-29797, 29799-29809, 29811, 29812, 29814-29816
	Software Development - Programming	6761, 18739-18741, 29813

Domain	Std #	Title	Level	Credits
Generic Computing	2792	Produce simple desktop published documents using templates	1	2
Generic Computing	2796	Demonstrate knowledge of the principles of electronic logic gates in computing	4	9
Generic Computing	2797	Demonstrate knowledge of the principles of computer networks	3	4
Generic Computing	5943	Investigate use of digital applications for leisure	1	2
Generic Computing	5946	Use computer technology to create and deliver a presentation from given content	1	3
Generic Computing	5951	Describe the concepts of information systems deployment	3	3
Generic Computing	5955	Demonstrate an understanding of documentation for computer applications	3	5
Generic Computing	5968	Discuss the social implications of information technology	3	3
Generic Computing	6745	Demonstrate and apply knowledge of single-user and multi-user computer operating systems	4	5
Software Development Programming	6761	Demonstrate an understanding of the principles of computer programming	5	7
Computer Support	6836	Apply the principles of resolving problems for single-user and multi-user computer operating systems	5	5
Computer Support	6852	Describe data communications	4	4
Generic Computing	7910	Demonstrate knowledge of computer data types and data structures	5	7
Generic Computing	18734	Create a web page using a template	1	2

Domain	Std #	Title	Level	Credits
Software Development Programming	18739	Create and use simple command sequences in a computer language	1	2
Software Development Programming	18740	Create a simple computer program to meet a set brief	2	3
Software Development Programming	18741	Create a computer program to provide a solution	3	6
Generic Computing	18743	Produce a spreadsheet from instructions using supplied data	1	2
Computer Support	18750	Produce a learner focused electronic training package for organisation use	3	5
Generic Computing	18756	Use and maintain a computer database for business reporting and decision making	3	3
Generic Computing	18758	Find information using the Internet	1	2
Generic Computing	25659	Create a web page using a mark-up language with a text editor	1	2
Generic Computing	25782	Investigate the use of Information and Communications Technologies in an organisation	3	6
Generic Computing	26226	Demonstrate knowledge of computer database management systems	4	3
Computer Support	26227	Describe and create a local area network	5	7
Generic Computing	26228	Evaluate and recommend with justification the suitability of computer applications against user requirements	4	4
Generic Computing	29769	Use the main features and functions of a word processing application for a purpose	2	3
Generic Computing	29770	Use the main features and functions of a spreadsheet application for a purpose	2	3
Generic Computing	29771	Use the main features and functions of a presentation application for a purpose	2	2
Generic Computing	29772	Manage files and folders using digital devices	2	2
Generic Computing	29773	Produce digital images for a range of digital media	2	3
Generic Computing	29774	Use the main features and functions of a desktop publishing application to create documents	2	3
Generic Computing	29775	Use the main features and functions of a web authoring and design tool to create a website	2	3
Generic Computing	29776	Use the main features of an HTML editor to create a website	2	4
Generic Computing	29777	Use the main features and functions of a database application to create and test a database	2	3

Domain	Std #	Title	Level	Credits
Generic Computing	29778	Use the main features and functions of a schematic diagram application to create diagrams	2	2
Generic Computing	29779	Create and test a software-controlled device built from components	2	3
Generic Computing	29780	Configure and use contemporary and emerging digital devices	2	3
Generic Computing	29781	Use the internet and common digital devices and software to gather information and connect with other users and devices	2	7
Generic Computing	29782	Demonstrate knowledge of computing hardware, software and terminology to select digital tools for specified purposes	2	5
Generic Computing	29783	Implement basic security when using digital devices and software	2	3
Computer Support	29784	Troubleshoot, fix and escalate simple or routine computing and connectivity problems	2	2
Generic Computing	29785	Use a word processing application to integrate images, spreadsheet and database data into documents	3	4
Generic Computing	29786	Produce a spreadsheet for organisational use	3	3
Generic Computing	29787	Produce and use a database to provide a solution for organisational use	3	3
Generic Computing	29788	Develop and evaluate an interactive website for organisational use	3	5
Generic Computing	29789	Use a presentation application to produce an interactive multimedia presentation	3	3
Generic Computing	29790	Apply digital tools to create and monitor a project plan	3	3
Generic Computing	29791	Capture and prepare digital media for integration into other applications	3	2
Generic Computing	29792	Use a desktop publishing application to produce documents	3	4
Generic Computing	29793	Investigate, plan, design and create digital outcome solutions to meet the requirements of a specified brief	3	5
Generic Computing	29794	Implement security solutions when using digital tools	3	5
Generic Computing	29795	Apply ethical behaviour when using digital tools	3	5
Generic Computing	29796	Collaborate effectively with others in a digital environment	3	7
Generic Computing	29797	Synchronise data across digital devices and multiple platforms	3	2
Computer Support	29798	Troubleshoot, fix and escalate a range of common hardware and software problems	3	3

Domain	Std #	Title	Level	Credits
Generic Computing	29799	Apply advanced word processing features and functions to produce complex documents	4	4
Generic Computing	29800	Apply advanced spreadsheet features and functions to meet the requirements of a brief	4	4
Generic Computing	29801	Plan, produce and deliver an interactive multimedia presentation using digital tools to meet requirements of a brief	4	3
Generic Computing	29802	Produce and use a relational database to address an organisational information system need	4	6
Generic Computing	29803	Use a desktop publishing application to produce documents integrating media for a stakeholder	4	3
Generic Computing	29804	Develop and evaluate an interactive website for a stakeholder	4	5
Generic Computing	29805	Design and create an integrated digital solution to meet the requirements of a specified brief	4	5
Generic Computing	29806	Use digital tools and critical thinking to analyse data and identify solutions to problems	4	10
Generic Computing	29807	Communicate professionally in a range of digital contexts, to maintain relationships and achieve objectives	4	3
Generic Computing	29808	Use digital technologies and systems securely, legally and ethically to gather, store, access and share information	4	5
Generic Computing	29809	Investigate current and emerging trends in the use of digital tools to support operational efficiency and effectiveness	4	5
Computer Support	29810	Apply essential IT technical knowledge and concepts to provide support of a computer's hardware, software and network	4	10
Generic Computing	29811	Describe the role of information systems and information technology in organisations	4	4
Generic Computing	29812	Apply knowledge and concepts of web design and scripting to plan, create and test an interactive user interface	4	10
Software Development Programming	29813	Apply essential knowledge and concepts of software development to create a program	4	10
Generic Computing	29814	Apply and evaluate digital tools to support the development and implementation of an IT project	4	10
Generic Computing	29815	Describe professional and ethical principles and practices, and comply with legal and organisational IT requirements	4	5
Generic Computing	29816	Communicate information and maintain relationships in an IT context	4	5
Computer Support	29817	Repair a personal computer and peripherals to module level	5	10

Appendix 2: Computing unit standards usage 2016 - 2020

Usage of computing unit standards 2017 – August 2020

These standards were last reviewed in 2016, listed in the Computing domain in January 2017.

Std #	Title	Level	Credits	2016	2017	2018	2019	2020*	Total
2792	Produce simple desktop published documents using templates	1	2	1901	1481	1213	1428	429	6452
2796	Demonstrate knowledge of the principles of electronic logic gates in computing	4	9	31	5	1	0	0	37
2797	Demonstrate knowledge of the principles of computer networks	3	4	1293	1120	797	200	71	3481
5943	Investigate use of digital applications for leisure	1	2	228	147	26	30	0	431
5946	Use computer technology to create and deliver a presentation from given content	1	3	1816	1693	1600	1605	535	7249
5951	Describe the concepts of information systems deployment	3	3	1020	842	575	23	3	2463
5955	Demonstrate an understanding of documentation for computer applications	3	5	838	484	262	15	34	1633
5968	Discuss the social implications of information technology	3	3	1200	882	600	75	7	2764
6745	Demonstrate and apply knowledge of single-user and multi-user computer operating systems	4	5	694	288	210	90	31	1313
6761	Demonstrate an understanding of the principles of computer programming	5	7	458	150	30	2	0	640
6836	Apply the principles of resolving problems for single-user and multi-user computer operating systems	5	5	619	130	14	3	0	766
6852	Describe data communications	4	4	659	324	99	29	31	1142
7910	Demonstrate knowledge of computer data types and data structures	5	7	635	149	13	3	0	800
18734	Create a web page using a template	1	2	1225	1037	1151	865	244	4522
18739	Create and use simple command sequences in a computer language	1	2	577	451	386	389	212	2015

Std #	Title	Level	Credits	2016	2017	2018	2019	2020*	Total
18740	Create a simple computer program to meet a set brief	2	3	187	185	152	129	47	700
18741	Create a computer program to provide a solution	3	6	240	168	76	77	118	679
18743	Produce a spreadsheet from instructions using supplied data	1	2	4026	2893	2574	2516	1043	13052
18750	Produce a learner focused electronic training package for organisation use	3	5	1165	775	440	10	1	2391
18756	Use and maintain a computer database for business reporting and decision making	3	3	345	609	341	273	25	1593
18758	Find information using the Internet	1	2	1422	875	757	949	243	4246
25659	Create a web page using a mark-up language with a text editor	1	2	895	832	890	994	549	4160
25782	Investigate the use of Information and Communications Technologies in an organisation	3	6	996	849	557	15	1	2418
26226	Demonstrate knowledge of computer database management systems	4	3	148	43	99	66	0	356
26227	Describe and create a local area network	5	7	781	136	33	2	1	953
26228	Evaluate and recommend with justification the suitability of computer applications against user requirements	4	4	82	22	102	107	2	315
29769	Use the main features and functions of a word processing application for a purpose	2	3	0	15	293	578	228	1114
29770	Use the main features and functions of a spreadsheet application for a purpose	2	3	0	40	304	516	276	1136
29771	Use the main features and functions of a presentation application for a purpose	2	2	0	20	332	625	301	1278
29772	Manage files and folders using digital devices	2	2	0	26	679	657	317	1679
29773	Produce digital images for a range of digital media	2	3	0	7	95	282	180	564
29774	Use the main features and functions of a desktop publishing application to create documents	2	3	0	16	141	360	194	711

Std #	Title	Level	Credits	2016	2017	2018	2019	2020*	Total
29775	Use the main features and functions of a web authoring and design tool to create a website	2	3	0	3	20	82	60	165
29776	Use the main features of an HTML editor to create a website	2	4	0	9	83	173	41	306
29777	Use the main features and functions of a database application to create and test a database	2	3	0	12	87	210	111	420
29778	Use the main features and functions of a schematic diagram application to create diagrams	2	2	0	1	365	343	180	889
29779	Create and test a software-controlled device built from components	2	3	0	5	0	29	12	46
29780	Configure and use contemporary and emerging digital devices	2	3	0	21	374	351	161	907
29781	Use the internet and common digital devices and software to gather information and connect with other users and devices	2	7	0	3	139	221	173	536
29782	Demonstrate knowledge of computing hardware, software and terminology to select digital tools for specified purposes	2	5	0	5	63	140	144	352
29783	Implement basic security when using digital devices and software	2	3	0	3	58	103	57	221
29784	Troubleshoot, fix and escalate simple or routine computing and connectivity problems	2	2	0	3	21	83	36	143
29785	Use a word processing application to integrate images, spreadsheet and database data into documents	3	4	0	7	398	396	270	1071
29786	Produce a spreadsheet for organisational use	3	3	0	29	407	467	250	1153
29787	Produce and use a database to provide a solution for organisational use	3	3	0	5	386	373	201	965
29788	Develop and evaluate an interactive website for organisational use	3	5	0	0	310	273	144	727
29789	Use a presentation application to produce an interactive multimedia presentation	3	3	0	1	305	296	161	763
29790	Apply digital tools to create and monitor a project plan	3	3	0	0	298	268	97	663
29791	Capture and prepare digital media for integration into other applications	3	2	0	0	332	324	132	788
29792	Use a desktop publishing application to produce documents	3	4	0	1	318	355	193	867

Std #	Title	Level	Credits	2016	2017	2018	2019	2020*	Total
29793	Investigate, plan, design and create digital outcome solutions to meet the requirements of a specified brief	3	5	0	0	290	283	220	793
29794	Implement security solutions when using digital tools	3	5	0	198	579	261	162	1200
29795	Apply ethical behaviour when using digital tools	3	5	0	194	575	259	168	1196
29796	Collaborate effectively with others in a digital environment	3	7	0	10	349	297	166	822
29797	Synchronise data across digital devices and multiple platforms	3	2	0	2	344	278	139	763
29798	Troubleshoot, fix and escalate a range of common hardware and software problems	3	3	0	0	367	285	111	763
29799	Apply advanced word processing features and functions to produce complex documents	4	4	0	0	158	95	0	253
29800	Apply advanced spreadsheet features and functions to meet the requirements of a brief	4	4	0	0	126	113	0	239
29801	Plan, produce and deliver an interactive multimedia presentation using digital tools to meet requirements of a brief	4	3	0	0	229	42	0	271
29802	Produce and use a relational database to address an organisational information system need	4	6	0	0	127	109	0	236
29803	Use a desktop publishing application to produce documents integrating media for a stakeholder	4	3	0	0	93	132	0	225
29804	Develop and evaluate an interactive website for a stakeholder	4	5	0	0	87	130	0	217
29805	Design and create an integrated digital solution to meet the requirements of a specified brief	4	5	0	7	121	110	32	270
29806	Use digital tools and critical thinking to analyse data and identify solutions to problems	4	10	0	11	99	134	0	244
29807	Communicate professionally in a range of digital contexts, to maintain relationships and achieve objectives	4	3	0	0	140	110	0	250
29808	Use digital technologies and systems securely, legally and ethically to gather, store, access and share information	4	5	0	0	140	110	0	250

Std #	Title	Level	Credits	2016	2017	2018	2019	2020*	Total
29809	Investigate current and emerging trends in the use of digital tools to support operational efficiency and effectiveness	4	5	0	0	92	135	0	227
29810	Apply essential IT technical knowledge and concepts to provide support of a computer's hardware, software and network	4	10	0	0	4	3	75	82
29811	Describe the role of information systems and information technology in organisations	4	4	0	0	0	0	0	0
29812	Apply knowledge and concepts of web design and scripting to plan, create and test an interactive user interface	4	10	0	0	0	0	0	0
29813	Apply essential knowledge and concepts of software development to create a program	4	10	0	0	9	33	0	42
29814	Apply and evaluate digital tools to support the development and implementation of an IT project	4	10	0	0	0	0	0	0
29815	Describe professional and ethical principles and practices, and comply with legal and organisational IT requirements	4	5	0	0	0	0	0	0
29816	Communicate information and maintain relationships in an IT context	4	5	0	0	0	0	0	0
29817	Repair a personal computer and peripherals to module level	5	10	0	0	0	0	0	0
	Total for computing standards (excludes expiring standards)			23,481	17,224	22,735	20,319	8,619	92,378
75	Listed 19 January 2017 and due for review by Dec 2021			2016	2017	2018	2019	2020*	

There was no usage reported for six of the standards (29811 - 29812, 29814 - 29817) developed specifically for the NZ Certificate in IT Essentials (but there was for 29813 re software development – mainly in schools).

Appendix 3: Computing unit standards in programmes for NZ qualifications

The analysis below is intended to provide a future focus lens to demand for the computing unit standards.

Computing standards in programmes for Level 2-4 NZ Computing and IT qualifications

Some of the computing standards have been developed to align with the NZ IT and Computing qualifications at Levels 2-4. The table below shows the uptake – programmes that include standards for these specific qualifications, and total programmes approved.

NZ IT and Computing Qualifications with programmes approved that include Computing unit standards					
Qual #	Qual Title	Level	Standards in approved programmes for the Computing qualifications	# prog with Computing USs	Compare: Total programmes Nov 2020
2591	NZ Certificate in Computing (User Fundamentals)	2	29769 – 29778, 29780 - 29784	12	19
2592	NZ Certificate in Computing (Intermediate User)	3	5951, 5968, 6836, 18756, 25782, 29772, 29778, 29780, 29785 - 29798	10	16
2593	NZ Certificate in Computing (Advanced User)	4	29799 – 29809	1	3
2594	NZ Certificate in IT Essentials (Level 4)	4	None	0	16

- There is greater use of these standards in programmes for the Level 2 qualification (12 programmes – 11 PTEs, 1 Wananga) and Level 3 qualification (10 programmes – 9 PTEs, 1 Wananga), with just one programme approved using standards for the Level 4 advanced user qualification and none for the 16 approved NZCITE programmes.
- Level 2 – all standards developed specifically to align with the qualification are included in one or more programme, except 29779
- Level 3 - all standards developed specifically to align with the qualification are included in one or more programme, along with some other Level 2, 3 and 5 computing standards
- Level 4 - all standards developed specifically to align with the advanced computing qualification are included in one programme, however none of the standards aligned to the NZCITE qual are in any of the 16 approved programmes.

NZ qualifications with computing standards in programmes

There are 26 NZ qualifications with programmes approved that include one or more computing unit standard (including the four mentioned above). Another three NZ qualifications that comprised only expiring computing standards have been removed from the list.

The tables below shows the NZ qualifications and which computing unit standards are in approved programmes towards these, along with a summary of programme owner categories.

NZ Qualifications with programmes approved that include Computing unit standards				
Qual #	Qual Title	Level	Stds in programmes for qual	Prog owners
0973	National Certificate of Educational Achievement (NCEA L2)	2	26769, 29772-29775, 29778, 29783	VPs Creative, and BCAT
2108	NZ Certificate in Hospitality	2	29774, 29778	
2199	NZ Certificate in Tourism	3	29785	1 ITO
2210	NZ Certificate in Telecommunications	3	6745	1 ITO
2220	NZ Cert in Agriculture (Farming Systems)	3	29770	1 PTE
2303	NZ Certificate in Contact Centres	3	18756, 24872	1 ITO, 1 ITP

NZ Qualifications with programmes approved that include Computing unit standards				
Qual #	Qual Title	Level	Stds in programmes for qual	Prog owners
2435	NZ Certificate in Manaaki Marae	2	5946	1 PTE
2452	NZ Certificate in Business (Administration and Technology)	3	18756, 20332, 24872, 25658, 25662, 2781, 2784, 2785, 2787, 2789 , 29770, 29782, 29784-29787, 29790, 29792, 29795, 29796, 5940, 5953, 6743	8 providers – 5 PTEs, 2 ITOs. 1 Wananga
2453	NZ Certificate in Business (Introduction to Team Leadership)	3	25658, 25661, 2785, 2787, 2789, 2797, 5947, 5953 , 5955, 5968	2 PTEs
2461	NZ Cert in Business (Admin and Technology)	4	18756, 24872, 2785, 2789, 5948, 5953	1 ITO (1 PTE exp std)
2591	NZ Certificate in Computing (User Fundamentals)	2	20332, 25655, 25656, 25662, 2780, 2781, 2784, 2786, 2788, 2790, 2791 , 29769-29778, 29780-29784, 5940, 5946, 6743	11 PTEs, 1 Wananga
2592	NZ Certificate in Computing (Intermediate User)	3	18753, 18755 , 18756, 24872, 25658, 25660, 25661 , 25782, 2781, 2785, 2787, 2789, 2797 , 29772, 29778, 29780, 29785-29798, 5947, 5948 , 5951, 5968, 6836	9 PTEs, 1 Wananga
2593	NZ Certificate in Computing (Advanced User)	4	29799-29809	Wananga
2625	NZ Certificate in Arts and Design	2	29771, 29773, 29774, 29781, 29791	2 PTEs
2626	NZ Certificate in Arts and Design	3	29788, 29791, 29792, 29793	1 PTE
2627	NZ Certificate in Arts and Design	4	29794, 29795, 29801, 29803, 29804	1 PTE
2628	NZ Certificate in Digital Media and Design	3	18750, 25658, 2789, 5947	1 ITP
2629	NZ Certificate in Digital Media and Design	4	29794, 29795, 29801, 29803, 29804	1 PTE
2630	NZ Certificate in Fashion	4	29801	1 PTE
2718	NZ Certificate in Locksmithing (Trade)	4	29782	1 ITO
2848	NZ Certificate in Early Childhood Learning and Care	2	29774	1 PTE
2861	NZ Certificate in Foundation Skills	1	18743, 18758, 25662, 2780 , 2792, 29769, 29770-29774, 29777, 29778, 29780-29784, 5946	12 PTEs
2862	NZ Certificate in Foundation Skills	2	18743, 18758, 20332, 25655, 25662, 2780, 2781, 2784, 2788, 2791 , 29769-29775, 29778, 29781-29784, 5940, 5946, 5957, 6743	21 – 18 PTEs and 3 ITPs
2863	NZ Certificate in Study and Career Preparation	3	18756, 25658, 25661, 2785, 2787, 2789 , 2797, 29786, 29787, 29790, 29794, 29795, 5947, 5953 , 5955, 5968	2 PTEs
2877	NZ Certificate in Whānau Ora	3	29792, 5968	1 ITO
3843	NZ Certificate in Building, Construction, and Allied Trades Skills	1	18743, 18758, 29778	1 PTE

26 NZ Qualifications with Computing unit standards in programmes

Note: expired/expiring standards in programmes shown in italic strikethrough (e.g ~~2784, 5940~~)

Programmes towards the Foundation skills, Business administration and several Creative arts qualifications include a significant number of computing standards, reinforcing the diverse need for them.

List of computing standards in programmes for any NZ qualification

The following table highlights which computing unit standards are included in approved programmes for NZ qualifications.

53 computing unit standards are part of 94 programmes approved towards 26 NZ quals – 18 of which are only in one programme. Each of these 53 standards are in programmes towards up to 7 different NZ qualifications. This suggests that there are 22 computing standards not in approved programmes for any NZ qualifications, and the review will consider usage and what other purposes there are for these standards.

Std ID #	# of NZ quals	NZ qualifications - by ref # and frequency of programmes approved for each qual	Programmes for quals
2792	1	2861 x 4	4
2797	3	2453, 2592, 2863	2-3
5946	4	2435, 2591 x 2, 2861 x 4, 2862	5-8
5951	1	2592	1
5955	2	2453, 2863	2
5968	4	2453, 2592 x 2, 2863, 2877	5
6745	1	2210	1
6836	1	2592	1
18743	3	2861 x 5, 2862 x 3, 3843 x 2	9-10
18750	1	2628	1
18756	5	2303, 2452 x 2, 2461, 2592 x 4, 2863 x 2	6-10
18758	3	2861 x 6, 2862 x 2, 3843	7-9
25782	1	2592	1
29769	4	0973, 2591 x 10, 2861, 2862 x 7	14-19
29770	5	2220, 2452, 2591 x 11, 2861 x 3, 2862 x 9	23 - 25
29771	4	2591 x 11, 2625, 2861 x 2, 2862 x 8	20 - 22
29772	5	0973, 2591 x 11, 2592 x 4, 2861, 2862 x 7	21 - 24
29773	5	0973, 2591 x 9, 2625 x 2, 2861, 2862 x 3	14 -16
29774	7	0973, 2108, 2591 x 11, 2625, 2848, 2861, 2862 x 8	21 – 24
29775	3	0973, 2591 x4, 2862	6
29776	1	2591 x 3	3
29777	2	2591 x 5, 2861	5-6
29778	7	0973, 2108, 2591 x 5, 2592 x 4, 2861 x 2, 2862 x 2, 3843 x 2	13 - 17
29780	3	2591 x 9, 2592 x 5, 2861	14 -15
29781	4	2591 x 11, 2625, 2861, 2862 x 8	19 -21
29782	5	2452, 2591 x 11, 2718, 2861, 2862	13–15
29783	4	0973, 2591 x 11, 2861, 2862 x 2	13 – 15
29784	4	2452, 2591 x 11, 2861, 2862	12 - 14
29785	3	2199, 2452 x 4, 2592 x 8	13
29786	3	2452 x 3, 2592 x 8, 2863 x 2	13
29787	3	2452, 2592 x 8, 2863 x 2	11
29788	2	2592 x 8, 2626	9
29789	1	2592 x 8	8
29790	3	2452, 2592 x 7, 2863 x 2	10
29791	3	2592 x 7, 2625, 2626 x 2	10
29792	4	2452 x 3, 2592 x 7, 2626, 2877	12
29793	2	2592 x 8, 2626	9
29794	4	2592 x 8, 2627, 2629, 2863	11
29795	5	2452, 2592 x 8, 2627, 2629, 2863	11 - 12
29796	2	2452, 2592 x 8	9
29797	1	2592 x 8	8
29798	1	2592 x 8	8
29799	1	2593	1
29800	1	2593	1
29801	4	2593, 2627 x2, 2629, 2630	3 - 5

Std ID #	# of NZ quals	NZ qualifications - by ref # and frequency of programmes approved for each qual	Programmes for quals
29802	1	2593	1
29803		2593, 2627, 2629	2-3
29804	3	2593, 2627, 2629	2-3
29805	1	2593	1
29806	1	2593	1
29807	1	2593	1
29808	1	2593	1
29809	1	2593	1
53 standards	1 – 7 quals	26 qualifications	1 – 25 programmes

Source: Extracted from NZQA report R0704 Standards in programmes for qualifications, August 2020

Computing standards NOT in programmes for any NZ qualification

There are 22 computing standards not in approved programmes for any NZ qualifications, and the review will consider usage and what other purposes there are for these standards.

The table below includes some comments related to usage and provider types.

Domain	Std #	Title	Level	Credits	Comments
Generic Computing	2796	Demonstrate knowledge of the principles of electronic logic gates in computing	4	9	Low usage – 6 since 2017 PTEs - expire?
Generic Computing	5943	Investigate use of digital applications for leisure	1	2	Low usage 30pa – but maintain for FAB?
Software Dev	6761	Demonstrate an understanding of the principles of computer programming	5	7	Dropped in 2019 to 2pa – ITP/PTE – expire?
Computer Support	6852	Describe data communications	4	4	Medium-low 30pa and mixed provider types – 2020 results
Generic Computing	7910	Demonstrate knowledge of computer data types and data structures	5	7	Dropped in 2019 to 3pa – PTEs expire?
Generic Computing	18734	Create a web page using a template	1	2	Medium usage, mixed providers including ITPs, PTEs & schools
Software Dev	18739	Create and use simple command sequences in a computer language	1	2	Medium usage, mainly schools
Software Dev	18740	Create a simple computer program to meet a set brief	2	3	Medium-low usage, mixed providers types
Software Dev	18741	Create a computer program to provide a solution	3	6	Medium-low usage, mixed providers types
Generic Computing	25659	Create a web page using a mark-up language with a text editor	1	2	Medium-high usage – only schools

Domain	Std #	Title	Level	Credits	Comments
<i>Generic Computing</i>	26226	Demonstrate knowledge of computer database management systems	4	3	Low and mixed provider types – 2020 results
<i>Computer Support</i>	26227	Describe and create a local area network	5	7	Low usage, dropped to 2 in 2019, PTEs Expire?
<i>Generic Computing</i>	26228	Evaluate and recommend with justification the suitability of computer applications against user requirements	4	4	Medium-low usage, mixed providers including PTEs & schools
<i>Generic Computing</i>	29779	Create and test a software-controlled device built from components	2	3	New standard - increasing mixed usage (ITP, PTE, > schools)
<i>Computer Support</i>	29810	Apply essential IT technical knowledge and concepts to provide support of a computer's hardware, software and network	4	10	NZCITE - New standard - increasing mixed usage (mainly schools)
<i>Generic Computing</i>	29811	Describe the role of information systems and information technology in organisations	4	4	NZCITE – no usage, prudent to maintain
<i>Generic Computing</i>	29812	Apply knowledge and concepts of web design and scripting to plan, create and test an interactive user interface	4	10	NZCITE – no usage, prudent to maintain
<i>Software Dev</i>	29813	Apply essential knowledge and concepts of software development to create a program	4	10	NZCITE - New standard - increasing mixed usage (mainly schools)
<i>Generic Computing</i>	29814	Apply and evaluate digital tools to support the development and implementation of an IT project	4	10	NZCITE – no usage, prudent to maintain
<i>Generic Computing</i>	29815	Describe professional and ethical principles and practices, and comply with legal and organisational IT requirements	4	5	NZCITE – no usage, prudent to maintain
<i>Generic Computing</i>	29816	Communicate information and maintain relationships in an IT context	4	5	NZCITE – no usage, prudent to maintain
<i>Computer Support</i>	29817	Repair a personal computer and peripherals to module level	5	10	No usage

Appendix 4: Original and reviewed Computing qualification GPOs and associated unit standards

Level 2 – NZ Certificate in Computing (User Fundamentals) 2591/ NZ Certificate in Computing (Foundation user) 4132 versions 1

Level 2 Computing qual 2591 v1 GPOs (40 credits)	Level 2 Computing qual 4132 v1 GPOs (60 credits)	Comments - 40 to 60 credits
<p>1. Use the main features, functions and settings of common digital devices and software to create, access, organise, present and store information and data relevant to the context. (20 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Word processing, spreadsheets, presentations, and may include other application software; - File and folder management; - Use of a range of digital devices. 	<p>1. Use the main features, functions and settings of a range of common digital devices and software (word processing, spreadsheets, presentations) to create, access, organise, present and store information and data relevant to the context. (25 credits)</p>	<ul style="list-style-type: none"> • GPO1 increased from 20 to 25 credits • Same intent - embedded conditions • Extra 5 credits required – greater choice of standards and/or increased credits for existing? • Standards 29769 – 29772 (10cr) + choice from 29773 – 29779 (10cr) + 5 cr gap
<p>2. Use internet and common digital devices and software to connect with other users and devices. (10 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Browsers and search engines; - Communication and collaboration tools such as email, messaging, conferencing, texting, forums, social media, connectivity apps - Recognising and applying conventions of online etiquette. 	<p>2. Use Internet and common digital devices and a range of relevant communication and collaboration application software to connect with other users and devices, recognising ethical responsibilities and applying conventions of online etiquette. (10 credits)</p>	<ul style="list-style-type: none"> • Same intent - embedded conditions • Standards 29780 and 29781
<p>3. Demonstrate knowledge of the types and purpose of common computing hardware, software and terminology to assist with choosing the right tool for the task. (5 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Technologies and systems networks, operating systems, hardware and application software - A range of common computing terms, abbreviations and symbols. 	<p>3. Demonstrate knowledge of the types and purpose of common computing hardware, operating systems, networks, software and terminology to choose the appropriate tool for a given task. (5 credits)</p>	<ul style="list-style-type: none"> • Same intent - embedded conditions • Standard 29782
<p>4. Recognise basic security risks and compliance requirements when using digital devices and software, and identify procedures and solutions to implement basic security in a home, work or study context. (3 credits)</p>	<p>4. Recognise basic security risks and compliance requirements when using digital devices and software and implement and maintain basic digital safety and security in a home, work, or study context. (5 credits)</p>	<ul style="list-style-type: none"> • GPO4 increased from 3 to 5 credits • Same intent - embedded conditions • Standard 29783 L2, 3 cr

Level 2 Computing qual 2591 v1 GPOs (40 credits)	Level 2 Computing qual 4132 v1 GPOs (60 credits)	Comments - 40 to 60 credits
<p>Programmes must include:</p> <ul style="list-style-type: none"> - Awareness of and compliance with relevant legal requirements, such as information privacy; copyright, Health and Safety; software licensing; - Recognising and addressing basic security risks, including the transparency and accessibility of information and maintaining basic security requirements. 		
<p>5. Trouble-shoot and fix simple or routine computing and connectivity problems. (2 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Using problem solving techniques to identify cause of issue and fix where appropriate; - Knowing when to seek help. 	<p>5. Investigate and use problem solving techniques and critical thinking to make informed decisions about digital solutions, and to trouble-shoot and fix simple or routine hardware, software and connectivity problems. (7 credits)</p>	<ul style="list-style-type: none"> • GPO5 increased from 2 to 7 credits – adding critical thinking • Standard 29784 2cr – grow this or embed problem solving/critical thinking into other computing standards? • Options for extra 5 credits? Maybe: <ul style="list-style-type: none"> - 7123 Apply a problem-solving method (L2,3cr) and - 30910 Respond to cyberbullying (L1, 2cr)
	<p>6. Apply basic communication, collaboration and self-management skills to enhance own learning in a digital context. (8 credits)</p>	<ul style="list-style-type: none"> • New GPO6 (8 credits) – adding soft skills • Options for 8 credits – new standard/s or 7117/7118 plus other comms, wellbeing or time mgmt. standards (see list below)?

Level 2 – Unit standards aligned to version 1 of the qualification Ref: 2591			
Unit standard ID	Title – Unit standards	Level	Credits
29769 L2 Comp 1a Word	Use the main features and functions of a word processing application for a purpose.	2	3
29770 L2 Comp 1b Spreadsheet	Use the main features and functions of a spreadsheet application for a purpose.	2	3
29771 L2 Comp 1c Presentation	Use the main features and functions of a presentation application for a purpose.	2	2
29772 L2 Comp 1d File & Folder Mgmt	Manage files and folders using digital devices.	2	2
29773 L2 Comp 1e (opt) Digital images	Produce digital images for a range of digital media.	2	3
29774 L2 Comp 1f - (opt) Desktop publishing	Use the main features and functions of a desktop publishing application to create documents.	2	3

29775 L2 Comp 1g (opt) Web authoring tool	Use the main features and functions of a web authoring and design tool to create a website.	2	3
29776 L2 Comp 1h (opt) Web mark-up language	Use the main features and functions of an HTML editor to create a website.	2	4
29777 L2 Comp 1i (opt) Database	Use the main features and functions of a database application to create and test a database.	2	3
29778 L2 Comp 1j (opt) Schematic diagrams	Use the main features and functions of a schematic diagram application to create diagrams.	2	2
29779 L2 Comp 1k (opt) Software-controlled dev	Create and test a software-controlled device built from components	2	3
29780 L2 Comp 2a Use digital devices L3 Com 6a	Configure and use contemporary and emerging digital devices.	2	3
29781 L2 Comp 2b Connectivity	Use the internet and common digital devices and software to gather information and connect with other users and devices.	2	7
29782 L2 Comp 3 Knowledge of ICT	Demonstrate knowledge of computing hardware, software and terminology to select digital tools for specified purposes.	2	5
29783 L2 Comp 4 Risks & Security	Implement basic security when using digital devices and software.	2	3
29784 L2 Comp 5 Troubleshoot	Troubleshoot, fix and escalate simple or routine computing and connectivity problems.	2	2

Other potential standards for consideration (re landscape alignment with qualification increasing from 40 to 60 credits) – achievement standards, LitNum or comms?

Standard ID #	Standard title	Level	Credits
32002	Compose and enter text to create and manage business documents	2	3
32000	Enter prescribed text accurately using basic keyboarding skills and identify safe ergonomic practices	1	3
7123	Apply a problem-solving method	2	3
9695	Examine problem-solving models and explain associated techniques	3	3
30910	Develop strategies to respond to cyberbullying	1	2
9680	Communicate within a specified organisational context	2	3
1277	Communicate information in a specified workplace	2	3
9677	Communicate in a team or group which has an objective	2	3
3492	Write a short report	2	3
496	Produce, implement, and reflect on a plan to improve own personal wellbeing	1	3
12349	Demonstrate knowledge of time management	2	3
7117	Develop strategies to enhance own learning	2	2
7118	Manage own learning in a programme	2	3

Level 3 – NZ Certificate in Computing (Intermediate User) 2592 versions 1 & 2

Level 3 Computing qual 2592 v1 GPOs	Level 3 Computing qual 2592 v2 GPOs	Comments
<p>1. Use a wide range of features, functions and settings of common digital devices, software and techniques to search, combine and manipulate data to create, access, organise, present and store information and data. (20 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - The intermediate level use of a variety of relevant software applications including word processing, spreadsheet, interactive web pages, presentation, database; use of basic web and image editing software; - Integrating data, images and information across applications to produce specified outcomes; - Search strategies and techniques. 	<p>1. Use a wide range of features, functions and settings of digital devices, software and techniques to search, access, create, combine, manipulate, store and share data, and explore current and emerging trends in the use of digital tools. (25 credits)</p>	<ul style="list-style-type: none"> • GPO1 increased from 20 to 25 credits • Same intent - embedded conditions • Extra 5 credits required – greater choice of standards and/or increased credits for existing? • See General conditions for programme (GPO condition detail moved). Same but <i>basic web and image editing software</i> changed to <i>use of digital media and image editing software</i>; also mentions collaboration tools but see GPO5) • Standards 29785 – 29789 (18cr) + choice from 18756, 29790 – 29792, 29772, 29778, 29779 (2-12cr); other options 29780, 29797 (from GPO2)
<p>2. Investigate, plan, design and create solutions to meet the requirements of a specified brief. (15 credits)</p> <p>Programmes must include research and consultation to determine requirements and recommend solution/s.</p>	<p>2. Investigate, plan, consult, design and develop integrated solution(s) to meet the requirements of a specified brief. (10 credits)</p>	<ul style="list-style-type: none"> • GPO2 decreased from 15 to 10 credits • Same intent - embedded conditions • Standard 29793 5cr – other 10 credits from selection in GPO1 (GPO1+2=35cr)
<p>3. Identify risks and meet compliance requirements when using digital tools and digitally stored and transmitted information, and explain procedures and implement solutions to meet security requirements in an organisation context. (5 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Compliance with organisational and legal regulations including privacy, health and safety, copyright, spamming, software licensing; - Recognising and addressing common security and privacy risks, including the transparency and accessibility of information, maintaining security requirements, and installation of anti-malware software 	<p>3. Identify risks and consistently apply appropriate ethics and practices when using digital tools and digitally stored and transmitted information to securely and legally operate in a digital environment. (10 credits)</p>	<ul style="list-style-type: none"> • GPO4 merged into GPO3 – content and credits • Same intent - embedded conditions • Standards 29794 and 29795

Level 3 Computing qual 2592 v1 GPOs	Level 3 Computing qual 2592 v2 GPOs	Comments
<p>4. Consistently apply appropriate ethics, standards, principles and practices to comply with legal and organisational requirements. (5 credits)</p> <p>Programmes must include consideration of confidentiality, privacy, standard professional conventions, copyright, referencing, appropriateness of material.</p>		<ul style="list-style-type: none"> GPO4 merged into GPO3 – content and credits
<p>5. Apply communication principles to effectively collaborate with others in a digital environment. (7 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Appropriate etiquette for online use; - Communication and interpersonal skills – written, verbal and non-verbal, formal and informal communication skills, presentations; - Selection and use of appropriate information/data and tools to present information. 	<p>4. Collaborate and communicate effectively with others in a range of formal and informal digital environments, using appropriate communication principles, etiquette and tools. (7 credits)</p>	<ul style="list-style-type: none"> Reviewed GPO4 was GPO5 Same intent - embedded conditions, changed language Standard 29796 (<i>also for L4 Comp GPO4</i>)
<p>6. Use a variety of digital devices to transfer data across multiple platforms. (5 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Synchronising data across multiple devices and platforms; - Data transferability – local and remote storage. 	<p>5. Manage own learning and work effectively in a digital context. (3 credits)</p>	<ul style="list-style-type: none"> New GPO5 (3 credits) – <i>replacing synchronise/transfer data (29797 L3, 2cr) and 29780 use digital devices – (propose to GPO1 options)</i> Options for 3 credits – new computing standard or 7118 <i>Manage own learning in a programme (L2, 3cr)?</i>
<p>7. Trouble-shoot and fix a range of common hardware and software problems. (3 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Using problem solving techniques to identify hardware and software problems; - Fixing problems by selecting from a range of known solutions; - Knowing how to find and when to seek help, using appropriate computing terminology. 	<p>6. Use problem solving techniques to trouble-shoot, fix or escalate a range of common hardware and software problems by selecting from known solutions. (5 credits)</p>	<ul style="list-style-type: none"> GPO7 increased from 3 to 5 credits Same intent but strengthened - embedded conditions Standard 29798 (L3, 3cr) troubleshoot Strengthen 29798 for 5 cr or add something like 9695 L3, 3cr problem solving?

Level 3 – Unit standards aligned to version 1 of the qualification Ref: 2592

Unit standard ID	Title – Unit standards	Level	Credits
29785 L3 Comp 1a Word integration	Use a word processing application to integrate images, spreadsheet and database data into documents	3	4
29786 L3 Comp 1b Spreadsheet	Produce a spreadsheet for organisational use	3	3
29787 L3 Comp 1c Database	Produce and use a database to provide a solution for organisational use	3	3
18756 (alternative database)	Use and maintain a computer database for business reporting and decision making	3	3
29788 L3 Comp 1d Interactive website	Develop and evaluate an interactive website for organisational use	3	5
29789 L3 Comp 1e Presentation	Use a presentation application to produce an interactive multimedia presentation	3	3
29790 L3 Comp 1f (Opt) Project plan tools	Apply digital tools to create and monitor a project plan	3	3
29791 L3 Comp 1g (Opt) Digital media integration	Capture and prepare digital media for integration into other applications	3	2
29792 L3 Comp 1h (Opt) Desktop pub, images	Use a desktop publishing application to produce documents	3	4
29772 L2 Comp 1d (Opt) File & Folder Mgt	Manage files and folders using digital devices.	2	2
29778 L2 Comp 1j (Opt) Schematic diags	Use the main features and functions of a schematic diagram application to create diagrams.	2	2
29779 L2 Comp 1k (Opt) Software-controlled device	Create and test a software-controlled device built from components	2	3
29793 L3 Comp 2 Design solutions	Investigate, plan, design and create digital outcome solutions to meet the requirements of a specified brief	3	5
29794 L3 Comp 3 Risks & security	Implement security solutions when using digital tools	3	5
29795 L3 Comp 4 Ethics & compliance	Apply ethical behaviour when using digital tools	3	5
29796 L3 Comp 5 Collaboration = L4 Comp 4b	Collaborate effectively with others in a digital environment	3	7
29780 L2 Comp 2a Use dig devices = L3 Comp 6a	Configure and use contemporary and emerging digital devices.	2	3
29797 L3 Comp 6b Synchronise data	Synchronise data across digital devices and multiple platforms.	3	2
29798 L3 Comp 7 Troubleshoot & fix	Troubleshoot, fix and escalate a range of common hardware and software problems	3	3

Level 4 – NZ Certificate in Computing (Advanced User) 2593 versions 1 & 2

Level 4 Computing qual 2593 v1 GPOs	Level 4 Computing qual 2593 v2 GPOs	Comments
<p>1. Use digital tools to access, filter, combine and manipulate data to efficiently extract, organise, integrate and share relevant information, and produce specified outcomes in a variety of settings. (20 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Applying digital tools and advanced techniques across a range of software applications, including integration and sharing of data across multiple applications; - Customising productivity software to optimise usage – word processing, spreadsheet, presentation, database; <p>Programmes may include:</p> <ul style="list-style-type: none"> - Web and image editing software; - Desk top publishing; - Specialist IT applications, such as financial, scientific, medical, insurance, banking, agri-business, travel, education. 	<p>1. Use digital tools and advanced techniques, including customising productivity software, to efficiently extract, organise, integrate and share relevant information, and produce specified outcomes in a variety of settings. (20 credits)</p>	<ul style="list-style-type: none"> • embedded conditions intent • See General conditions for programme (GPO condition detail moved). • Standards 29799 – 29802 (17cr) + choice from L4 29803 or 29804, or other L2 or 3 standards (3-5cr – 2cr ex/for GPO2)
<p>2. Investigate, plan, design and create solutions integrating the use of several different applications to meet the requirements of specified briefs. (10 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Research and stakeholder consultations to determine requirements and recommend solutions; - Using project planning tools and techniques. 	<p>2. Investigate, plan, consult, design and create solutions integrating the advanced use of several different applications and project planning tools and techniques, to meet the requirements of specified briefs. (10 credits)</p>	<ul style="list-style-type: none"> • embedded conditions • Standards 29805 & 29790 (8cr) – spare 2cr ex/for GPO1
<p>3. Use critical thinking skills, problem solving and decision making techniques to analyse problems, make informed decisions, and identify solutions. (10 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Problem solving, logic and reasoning skills; - Research and analysis to make sense of data; - Statistical analysis applications. 	<p>3. Use critical thinking skills, statistical analysis applications, and problem solving and decision making techniques to research and analyse problems, interpret data, make informed decisions, and identify solutions (10 credits)</p>	<ul style="list-style-type: none"> • embedded conditions • Standard 29806

Level 4 Computing qual 2593 v1 GPOs	Level 4 Computing qual 2593 v2 GPOs	Comments
<p>4. Communicate clearly and professionally with colleagues and stakeholders in a range of contexts, to maintain relationships and achieve objectives. (10 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Exploring ways of connecting with others using a variety of collaborative tools and platforms; - Applying appropriate etiquette and professional practice for online social media and networking; - Distinction between modes of communication and interpretation of messages 	<p>4. Communicate and collaborate clearly and professionally with colleagues and stakeholders in a range of contexts, using a variety of collaborative tools and platforms, to maintain relationships and achieve objectives. (10 credits)</p>	<ul style="list-style-type: none"> • embedded conditions • Standards 29807 and 29796 (ex L3)
<p>5. Use digital technologies and systems securely, legally and ethically when gathering, storing, accessing and sharing information. (5 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Awareness of the permanence and transparency of all activities - confidentiality, privacy, standard professional conventions, copyright; - Secure access and practices, identification and management of risks; - Compliance with legislations and industry best practice, and awareness of potential impact of legislative changes. 	<p>5. Use digital technologies and systems securely, legally and ethically when gathering, storing, accessing and sharing information using standard professional conventions. (5 credits)</p> <p>Learning must include awareness of the permanence and transparency of all activities.</p>	<ul style="list-style-type: none"> • embedded conditions • Standard 29808
<p>6. Explore and evaluate current and emerging trends in the use of digital tools to support operational efficiency and effectiveness. (5 credits)</p>	<p>6. Explore and evaluate current and emerging trends relating to using digital tools and digitally stored and transmitted information to support operational efficiency and effectiveness. (5 credits)</p>	<ul style="list-style-type: none"> • Standard 29809

Level 4 – Unit standards aligned to version 1 of the qualification Ref: 2593

Unit standard ID	Title – Unit standards	Level	Credits
29799 L4 Comp 1a Adv word	Apply advanced word processing features and functions to produce complex documents	4	4
29800 L4 Comp 1b Adv spreadsheets	Apply advanced spreadsheet features and functions to meet the requirements of a brief	4	4
29801 L4 Comp 1c Adv presentation	Plan, produce and deliver an interactive multimedia presentation using digital tools to meet requirements of a brief	4	3
29802 L4 Comp 1d = L4 ITE 2B Database info systems	Produce and use a relational database to address an organisational information system need	4	6
29803 L4 Comp 1e – opt Desktop publishing	Use a desktop publishing application to produce documents integrating media for a stakeholder	4	3
29804 L4 Comp 1f – opt Website	Develop and evaluate an interactive website for a stakeholder	4	5
29791 L3 Comp 1g (Opt) Digital media integration	Capture and prepare digital media for integration into other applications	3	2
18756 (Opt)	Use and maintain a computer database for business reporting and decision making	3	3
29772 L2 Comp 1d (Opt) File & Folder Mgmt	Manage files and folders using digital devices.	2	2
29778 L2 Comp 1j (Opt) Schematic diagram	Use the main features and functions of a schematic diagram application to create diagrams.	2	2
29779 L2 Comp 1k (Opt) Software-controlled device	Create and test a software-controlled device built from components	2	3
29805 L4 Comp 2a Integrate & create	Design and create an integrated digital solution to meet the requirements of a specified brief	4	5
29790 L3 Comp 1f opt Project plan tools use = L4 Comp 2b	Apply digital tools to create and monitor a project plan	3	3
29806 L4 Comp 3 Critical thinking	Use digital tools and critical thinking to analyse data and identify solutions to problems.	4	10
29807 L4 Comp 4a Comms & relationships	Communicate professionally in a range of digital contexts, to maintain relationships and achieve objectives	4	3
29796 L3 Comp 5 Comms & collaboration = L4 Comp 4b	Collaborate effectively with others in a digital environment	3	7
29808 L4 Comp 5 Security & ethics	Use digital technologies and systems securely, legally and ethically to gather, store, access and share information	4	5
29809 L4 Comp 6 Emerging trends	Investigate current and emerging trends in the use of digital tools to support operational efficiency and effectiveness	4	5

Level 4 – NZ Certificate in IT Essentials 2594 versions 1 & 2

Level 4 IT Essentials qual 2594 v1 GPOs	Level 4 IT Essentials qual 2594 v2 GPOs	Comments
<p>1. Apply essential knowledge and concepts of computer hardware, operating systems, applications, and networks to provide support for hardware and software resources and a foundation for the IT Profession. (10 credits)</p> <p>Programmes must include experiential learning of basic Information Technology knowledge and concepts including:</p> <ul style="list-style-type: none"> - Hardware - standard computer components, maintenance, assembly, disassembly; - Knowledge of a range of operating systems, with experience using one operating system – installation, basic configuration, standard command line utilities; installing device drivers; - Basic networking concepts, devices, and internet-based services; - Security concepts – end user level; - Concepts of local and remote storage technologies. 	<p>1. Apply knowledge of computer hardware, operating systems, applications, networks, storage and security to provide support for hardware and software resources and a foundation for infrastructure in the IT Profession. (12 credits)</p>	<ul style="list-style-type: none"> • GPO1 increased from 10 to 12 credits • Same intent - embedded conditions • Standard 29812 – increase by 2 credits?
<p>2. Apply essential knowledge and concepts of business analysis, database, and user experience to provide a foundation for supporting organisational information systems requirements. (10 credits)</p> <p>Programmes must include experiential learning of basic Information Systems knowledge and concepts including:</p> <ul style="list-style-type: none"> - Business concepts; understanding of the business environment and the cultural context of business; - Creating a simple database, queries, forms and reports; - User experience – interface that provides for user data entry, validation, restricting information with drop down lists, usability by others. 	<p>2. Apply knowledge of database design, development, queries and management, to support organisational information systems requirements. (6 credits)</p>	<ul style="list-style-type: none"> • GPO2 decreased from 10 to 6 credits • BA & UX moved to GPO3 • embedded conditions • Standards 29811 (4cr IS & IT) & 29802 (6cr - database) – maintain just 29802 for this GPO – but also for L4 Comp GPO1)?
<p>3. Contribute to user interface design using essential knowledge and concepts of web design. (10 credits)</p> <p>Programmes must include experiential learning of essential knowledge and concepts of web design including:</p> <ul style="list-style-type: none"> - Multimedia – graphics, sound, video, text; - Interactivity, scripting and/or database content management system (CMS) - Techniques and tools in media design; - Consideration of user experience (Ux), documentation and accessibility. 	<p>3. Apply knowledge and concepts of business analysis, user experience and interface design, to create interactive digital media. (12 credits)</p>	<ul style="list-style-type: none"> • GPO3 increased from 10 to 12 credits • Focus moved AWAY from web design towards interactive digital media • BA & UX moved here from GPO3 • Standard 29812 10cr – increase by 2cr?

Level 4 IT Essentials qual 2594 v1 GPOs	Level 4 IT Essentials qual 2594 v2 GPOs	Comments
<p>4. Apply essential knowledge and concepts of software development to provide a foundation for developing applications. (10 credits)</p> <p>Programmes must include experiential learning of essential knowledge and concepts of software development including:</p> <ul style="list-style-type: none"> - Programming fundamentals – concepts and tools (logic diagrams; text editor - command line interface (CLI) or integrated development environment (IDE); compilers; interpreters); - Developing applications including data models, databases and programming, with attention to user experience, documentation and coding standards; - Mathematics and logic concepts that underpin theory and practice of software development. 	<p>4. Apply knowledge of programming fundamentals, mathematical and logical concepts that underpin computational thinking, and concepts of software development to write code and create simple applications. (15 credits)</p>	<ul style="list-style-type: none"> • GPO4 increased from 10 to 15 credits • Same intent - embedded conditions • Standard 29813 10cr – increase by 5 cr or add lower level coding standard as a building block?
<p>5. Apply project management and planning tools to meet the requirements of specified briefs and provide a foundation for the IT Profession. (10 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Lifecycle methodology, including development, ongoing maintenance, and security; - Awareness of project management methodologies and use of planning tools; - Developing a project plan based on a brief, which includes end-user requirements, training and documentation; resource management; key milestones, timelines, deliverables, work schedule, testing; - Monitoring and reporting progress, documenting change, version control, identification and management of risks. 	<p>5. Apply industry relevant project management and planning tools and methodologies to meet the requirements of specified briefs. (5 credits)</p>	<ul style="list-style-type: none"> • GPO5 decreased from 10 to 5 credits • embedded intent of conditions – lost specifics • Standard 29814 (10cr) – review down to 5cr?
<p>6. Apply appropriate professional, ethical and legal principles and practices to comply with legal and organisational requirements and provide a foundation for the IT Profession. (5 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> - Ethical and professional work practices; - Compliance with regulations, legislation, internal policies; - Confidentiality, privacy, standard professional conventions, intellectual property, copyright; - Treaty of Waitangi /Te Tiriti o Waitangi. 	<p>6. Apply appropriate professional and ethical principles and practices to comply with essential legal and organisational requirements in a range of contexts within the IT industry. (5 credits)</p>	<ul style="list-style-type: none"> • embedded conditions • General conditions for programmes: <i>Programme design must also consider ngā kaupapa o te Tiriti o Waitangi (the principles of the Treaty of Waitangi).</i> • Standard 29815
<p>7. Communicate clearly and professionally to maintain relationships and achieve objectives in a range of contexts within the IT industry. (5 credits)</p> <p>Programmes must include:</p> <ul style="list-style-type: none"> • Interpersonal skills; Communication skills, oral and visual presentations, structured report writing. 	<p>7. Communicate and collaborate clearly and professionally to maintain relationships and achieve objectives in a range of contexts within the IT industry. (5 credits)</p>	<ul style="list-style-type: none"> • embedded conditions - emphasise collaboration • Standard 29816

Level 4 – Unit standards aligned to version 1 of the CITE qualification Ref: 2594

Unit standard ID	Title – Unit standards	Level	Credits
29810 L4 ITE 1 Infrastructure	Apply essential IT technical knowledge and concepts to provide support of a computer’s hardware, software and network	4	10
29811 L4 ITE 2A IT in Bus Orgs	Describe the role of information systems and information technology in organisations	4	4
29802 L4 Comp 1d Database Info Systems = L4 ITE 2B	Produce and use a relational database to address an organisational information system need	4	6
29812 L4 ITE 3 User interface	Apply knowledge and concepts of web design and scripting to plan, create and test an interactive user interface	4	10
29813 L4 ITE 4 Software Development	Apply essential knowledge and concepts of software development to create a program	4	10
29814 L4 ITE 5 Project management tools	Apply and evaluate digital tools to support the development and implementation of an IT project	4	10
29815 L4 ITE 6 Professional practice & compliance	Describe professional and ethical principles and practices and comply with legal and organisational IT requirements.	4	5
29816 L4 ITE 7 Communications & relationships	Communicate information and maintain relationships in an IT context	4	5

Appendix 5: Unit standard template (updated)

Title			
Level		Credits	
Purpose			
Classification	Subfield > Domain		
Available grade	Achieved, Merit, and Excellence		
Prerequisites	[Only appears if populated.]		
Criteria for Merit	[Only appears if populated.]		
Criteria for Excellence	[Only appears if populated.]		

Guidance Information

Outcomes and performance criteria

Outcome 1

Performance criteria

1.1

Outcome 2

Performance criteria

2.1

Replacement information	This unit standard replaced unit standard nnnnn. [Only appears if populated.]
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Planned review date	dd MMMM yyyy
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1		

Consent and Moderation Requirements (CMR) reference	nnnn
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact the SSB ssb@email.address if you wish to suggest changes to the content of this unit standard.

Appendix 6: Guidelines for listing assessment standards on the DAS (extract)

Standard-setting bodies (SSBs) are responsible for the quality of assessment standards submitted to Approvals and Accreditation for listing on the Directory of Assessment Standards (DAS).

Assessment standards (achievement and unit standards) are listed on the DAS in accordance with the [Directory of Assessment Standards Listing and Operational Rules 2011](#) using information provided in the [Guidelines for listing assessment standards and consent and moderation requirements on the Directory of Assessment Standards \(PDF, 727KB\)](#).

Assessment standards specify the knowledge, skills and attributes (the outcomes) and the performance criteria (level and sufficiency of the assessment evidence) required to demonstrate achievement of the outcomes. They are used to inform the design of assessment practice in education and training but do not specify programme content, modes of delivery and assessment activity.

Assessment standards are used to inform the design of assessment practice within a range of education and training including the National Certificates in Educational Achievement (NCEAs), training schemes, programmes leading to qualifications at Levels 1 to 6 and diplomas at Level 7 on the New Zealand Qualifications Framework (NZQF).

Approval and listing standards on the Directory of Assessment Standards

A standard will not be listed on the Directory if it:

- unnecessarily duplicates a standard that is listed, except where that listed standard is being replaced; or
- creates unreasonable restrictions on the mode of assessment; or
- creates unreasonable barriers to access in terms of gender, ethnicity or cultural background.

Standards will not be listed at Levels 7 to 10 for use within qualifications that are degrees or post-graduate qualifications.

Changes to assessment standards: includes ERs-PC, ENs-Guidance Info

Each assessment standard is listed with a review period of a maximum of five years. Changes are normally made to assessment standards as a result of a review.

Applications for assessment standards must include evidence of how the standards match the needs of key stakeholders. This can be in the form of a summary statement from the standard setting body that justifies the relevance of the standard and its expected use, and includes an outline of consultation and endorsement from key stakeholders.

Title

The title of the standard reflects the outcomes.

Names of trademarked products, training and assessment material, tertiary education organisations, or commercial organisations must not be used as part of the title.

Titles must:

- make sense when preceded by 'the candidate is able to'
- specify conditions and/or context consistent with the unit standard's classification
- not be more than 120 characters, including punctuation and spaces
- be written as a single unique sentence with the verb in the active voice

Classification

Assessment standards must be classified in a domain listed on the Directory of Assessment Standards (DAS). The content of an assessment standard must be consistent with the domain in which it is classified.

Levels

The assessment standards must be assigned one of the levels of the NZQF. The level assigned to the standard must provide a best match between the level descriptors and the outcomes and performance criteria or achievement criteria of the standard.

Refer to The New Zealand Qualifications Framework available at <http://www.nzqa.govt.nz/assets/Studying-in-NZ/New-Zealand-Qualification-Framework/requirements-nzqf.pdf> (see page 30). An extract regarding level descriptors is available as appendix 7.

Credits

A standard must be assigned a credit value that reflects the notional learning time it is expected to take the learner to meet the outcomes of the standard. One credit represents a notional 10 hours of learning, practice, and assessment time. This includes time taken to gather the evidence for assessment purposes.

The credits allocated to the standard can vary depending on the level and complexity of the outcomes.

Pre-requisites

Pre-requisites will normally be at the same or a lower level than the standards for which they are pre-requisites. They typically relate to health, safety, legislative requirements, and skills and knowledge.

Purpose

The purpose statement succinctly describes why this standard is needed. In particular the use and relevance of the standard to learners, employers and communities in a context.

In many instances, the outcomes may be used in similar ways across more than one industry, community or sector. The standard must differentiate clearly between the outcomes the standard recognises and the context in which these may be used in order to encourage use by more than one standard setting body.

Outcomes

The outcomes explain clearly to learners, whānau, employers, education organisations and others the specific knowledge, skills, and attributes a learner has demonstrated, and the context within which these have been assessed. Standards should reflect useful outcomes recognising the overall development and acquisition of skills and knowledge in the field.

The outcomes:

- describe performance that can be demonstrated
- can be assessed against specific fit-for-purpose criteria
- relate to the title, level and purpose of the standard
- are clear, specific, coherent, achievable and measurable.

Where a standard will be used in a programme leading to a New Zealand qualification, it is unlikely that a single assessment standard would be sufficient to recognise a graduate profile outcome.

Performance criteria (replace Evidence Requirements)

The performance criteria show what is needed to demonstrate the outcomes have been achieved. These performance criteria must be clearly described and:

- relate to each outcome to be achieved
- indicate the standard of performance required
- provide sufficient detail for valid and consistent assessments to be made.

It is important that the performance criteria do not include assessment tasks, 'model answers' or instructions to assessors about the way to conduct assessment.

Examples

Outcome 1

Maintain natural gas filtration equipment.

Performance criteria

- 1.1 Intended work activities are clearly communicated to the appropriate personnel before work begins.
Range may include – customer, control operator, area technician.
- 1.2 Filter system is isolated from service without disrupting the gas supply in accordance with workplace procedures.
- 1.3 Filter elements are inspected and replaced in accordance with workplace procedures
Range includes – differential pressure, valve position.

Outcome 1

Trim meat products in a meat processing operation under close supervision.

Performance criteria

- 1.1 Use personal protective equipment (PPE) while trimming meat products. PPE includes gloves, footwear, safety glasses.
- 1.2 Use trimming equipment provided safely and effectively in accordance with workplace procedures.
- 1.3 Trim meat products and deposit in designated place. This must include the trimming of three meat products.
- 1.4 Clean and store trimming equipment after use in accordance with manufacturers' instructions and workplace procedures.

Guidance information (replaces Explanatory notes)

It is optional to include guidance information in a standard. When it is included it is used to ensure the assessment standard can be interpreted in a consistent way.

The outcomes and performance criteria should be clear enough for assessment of the standard to be undertaken consistently without further explanation.

Guidance information can include references and legislation, and relevant definitions.

References and legislation

The standard may provide a clear and accurate reference to specific publications, Acts, codes, regulations and other materials cited in the standard which are directly relevant to the standard outcomes.

References to publications should use a recognised convention and include the author, title, publisher and date of publication, as minimum information.

Definitions

Definitions or translations of terms must be included where the term is being used outside of normal usage or where definitions assist in clarifying the assessment standard.

Reviewing standards (Categories of change A, B, C, D)

All assessment standards must be periodically reviewed to ensure they remain fit for purpose. Factors such as the extent and type of industry change, legislative requirements, and moderation feedback will drive how often standards are reviewed.

As a result of a review there may be:

- Category A or B change:
No or no substantial changes to the standard or the outcomes and performance criteria. The standard setting body considers that people credited with either the new or old version of the standard are comparable in terms of competence.
The result is either a category A or B change.

Minor changes include:

- correcting wording
 - updating legislation or pre-requisites
 - improving assessability
 - amending classification.
- Category C or D change:
There is significant change needed to the standard as it is no longer fit for purpose. There are two options:
 - a new standard may be developed to replace the existing one, so the status of the existing standard is changed to expiring and a last date for assessment recorded. The standard setting body considers that people credited with the new and old versions are different in terms of competence.
The result is a category C change.
 - the standard is no longer required or being used and the status is changed to discontinued.
The result is a Category D change.

If the status of a standard following a review is changed to either expiring or discontinued the expiry date must take into account the extent of use of the standard and allow sufficient time for:

- qualification developers, programme owners and organisations with consent to assess against the assessment standard to update qualifications and programmes, and develop new or revised assessment materials
- candidates to complete current programmes or transition to new ones.

Following a review of standard(s) the standard setting body completes a Change Report to explain the:

- rationale for the review
- changes made as a result of the review
- impact on organisations with consent to assess
- information about transition to the new versions of unit standards.

Quality assurance – evaluative approach

Quality assurance uses an evaluative approach to reach judgements on a transparent, robust and credible basis, underpinned by the following principles:

- strategic and needs based
- focused on outcomes
- quality as a dynamic concept - including ongoing improvement
- flexibility
- high trust and accountability.

Approving assessment standards

The decision to approve standards is made by using Rubric 1 to answer the evaluation question:

How well does the assessment standard meet the requirements for listing on the Directory of Assessment Standards?

Rubric 1: Performance criteria for rating answers to the evaluation question to list an assessment standard

Approved	<p>Performance criteria ALL of the following:</p> <ul style="list-style-type: none">• The purpose of the standard matches the needs of stakeholders.• The outcomes and performance criteria in the standard reflect the needs of stakeholders.• The standard can be readily understood and enables multiple assessors to consistently assess the outcomes to the required performance level.• The standard adequately meets the technical listing requirements.
Not approved	<p>ANY of the following:</p> <ul style="list-style-type: none">• The purpose of the standard does not convincingly demonstrate it matches the needs of stakeholders.• The outcomes and performance criteria in the standard do not match the needs of stakeholders.• The outcomes and performance criteria in the standard are not clear and able to be assessed.• The standard does not adequately meet the minimum technical listing requirements

Source: <https://www.nzqa.govt.nz/providers-partners/approval-accreditation-and-registration/list-assessment-stds/>

Appendix 7: NZQF Level Descriptors extract

The following table is intended to provide an overview of the levels on New Zealand Qualifications Framework (NZQF). More information is available at: <https://www.nzqa.govt.nz/studying-in-new-zealand/understand-nz-quals/>

The table below outlines skills you'll learn at each level of the NZQF. This table gives you details of what a student is expected to know, do and be after graduating at a particular level. You'll see that outside of just competence, NZQF levels also expect certain attitudes, behaviours and attributes from students.

Level	KNOWLEDGE	SKILLS	APPLICATION
1	Basic general and/or foundation knowledge	Apply basic solutions to simple problems Apply basic skills required to carry out simple tasks	Highly structured contexts Requiring some responsibility for own learning Interacting with others
2	Basic factual and/or operational knowledge of a field of work or study	Apply known solutions to familiar problems Apply standard processes relevant to the field of work or study	General supervision Requiring some responsibility for own learning and performance Collaborating with others
3	Some operational and theoretical knowledge in a field of work or study	Select and apply from a range of known solutions to familiar problems Apply a range of standard processes relevant to the field of work or study	Limited supervision Requiring major responsibility for own learning and performance Adapting own behaviour when interacting with others Contributing to group performance
4	Broad operational and theoretical knowledge in a field of work or study	Select and apply solutions to familiar and sometimes unfamiliar problems Select and apply a range of standard and non-standard processes relevant to the field of work or study	Self-management of learning and performance under broad guidance Some responsibility for performance of others
5	Broad operational or technical and theoretical knowledge within a specific field of work or study	Select and apply a range of solutions to familiar and sometimes unfamiliar problems Select and apply a range of standard and non-standard processes relevant to the field of work or study	Complete self-management of learning and performance within defined contexts Some responsibility for the management of learning and performance of others
6	Specialised technical or theoretical knowledge with depth in a field of work or study	Analyse and generate solutions to familiar and unfamiliar problems Select and apply a range of standard and non-standard processes relevant to the field of work or study	Complete self-management of learning and performance within dynamic contexts Responsibility for leadership within dynamic contexts

Source: <https://www.nzqa.govt.nz/studying-in-new-zealand/understand-nz-quals/#heading2-0>

Appendix 8: Achievement standards – Technology Matrix

This matrix includes the new standards for Digital Technologies and Hangarau Matihiko, released in 2017 (level 1) and 2018 (levels 2 and 3).

Technology Generic	AS 91044 1.1 Undertake brief development to address a need or opportunity 4 credits Internal	AS91045 1.2 Use planning tools to guide the technological development of an outcome to address a brief 4 credits Internal	AS91046 1.3 Use design ideas to produce a conceptual design for an outcome to address a brief 6 credits Internal	AS91047 1.4 Undertake development to make a prototype to address a brief 6 credits Internal
	AS91048 1.5 Demonstrate understanding of how technological modelling supports decision-making 4 credits External	AS91049 1.6 Demonstrate understanding of how materials enable technological products to function 4 credits External	AS91050 1.7 Demonstrate understanding of the role of subsystems in technological systems 4 credits External	AS91051 1.8 Demonstrate understanding of how different disciplines influence a technological development 4 credits Internal
	AS91052 1.9 Demonstrate understanding of the ways a technological outcome, people, and social and physical environments interact 4 credits Internal	AS91053 1.10 Demonstrate understanding of design elements 3 credits External	AS91054 1.11 Demonstrate understanding of basic human factors in design 4 credits Internal	AS91055 1.12 Demonstrate understanding of basic concepts used in manufacturing 4 credits Internal
	AS91056 1.13 Implement a multi-unit manufacturing process 4 credits Internal			
Specialist Categories of Technological Knowledge and Skills	Construction & Mechanical Technologies focuses on making and knowing how to make products and devices. <i>It is envisaged these standards will provide assessment tools for current school courses such as: hard materials, product development, textiles, automotive, furniture making, fashion, etc.</i>	Design and Visual Communication focuses on where visual literacy and creative thinking is developed, using visual communication techniques. <i>It is envisaged that these standards would provide assessment tools that school courses could access such as: Graphics, Product Design, and Fashion, Textiles, etc.</i>	Digital Technologies and Hangarau Matihiko focuses on applying and knowing about computational thinking and designing and developing digital outcomes. <i>It is envisaged these standards will provide assessment tools for current school courses such as: computing, digital media, information management, and electronics etc.</i>	Processing Technologies focuses on formulating and knowing how to formulate processed products. <i>It is envisaged these standards will provide assessment tools for current school courses such as: Food technology, biotechnology, chemical technology, agriculture and horticulture, product development, and textiles, etc.</i>
	AS91057 1.20 Implement basic procedures using resistant materials to make a specified product 6 credits Internal	AS91063 1.30 Produce freehand sketches to communicate own design ideas 3 credits External	AS91877 1.1 Develop a proposal for a digital outcome 3 credits Internal	AS91082 1.60 Implement basic procedures to process a specified product 4 credits Internal
	AS91058 1.21 Implement basic procedures using textile material to make a specified product 6 credits Internal	AS91064 1.31 Produce instrumental, multi-view orthographic drawings that communicate technical features of design ideas 3 credits External	AS91878 1.2 Develop a design for a digital outcome 3 credits Internal	AS91083 1.61 Demonstrate understanding of basic concepts used in processing 4 credits Internal
	AS91059 1.22 Demonstrate understanding of basic concepts used to make products from resistant materials 4 credits Internal	AS91065 1.32 Produce instrumental paraline drawings to communicate design ideas 3 credits External	AS91879 1.3 Develop an outcome to manage data 4 credits Internal	AS91084 1.62 Demonstrate understanding of basic concepts used in preservation and packaging techniques for product storage 4 credits Internal

AS91060 1.23 Demonstrate understanding of basic concepts used to make products from textile materials 4 credits Internal	AS91066 1.33 Use rendering techniques to communicate the form of design ideas 3 credits Internal	AS91880 1.4 Develop a digital media outcome 4 credits Internal
AS91061 1.24 Demonstrate understanding of basic concepts related to structures 3 credits Internal	AS91067 1.34 Use the work of an influential designer to inform design ideas 3 credits Internal	AS91881 1.5 Develop an electronics outcome 6 credits Internal
AS91062 1.25 Demonstrate understanding of basic concepts related to machines 3 credits Internal	AS91068 1.35 Undertake development of design ideas through graphics practice 6 credits Internal	AS91882 1.6 Develop a computer system 4 credits Internal
AS91096 1.26 Make basic adaptations to a pattern to enable a design to fit a person or item 4 credits Internal	AS91069 1.36 Promote an organised body of design work to an audience using visual communication techniques 4 credits Internal	AS91883 1.7 Develop a computer program 4 credits Internal
<i>NB</i> <i>All teaching and learning programmes or courses in technology can be assessed using standards from anywhere across this matrix.</i>		AS91884 1.8 Use basic iterative processes to plan and develop a digital outcome 6 credits Internal
		AS91885 1.9 Demonstrate understanding of searching and sorting algorithms 3 credits Internal
		AS91886 1.10 Demonstrate understanding of human computer interaction 3 credits External
		AS91887 1.11 Demonstrate understanding of compression coding for a chosen media type 3 credits External

Generic Technology	AS91354 2.1 Undertake brief development to address an issue 4 credits Internal	AS91355 2.2 Select and use planning tools to manage the development of an outcome 4 credits Internal	AS91356 2.3 Develop a conceptual design for an outcome 6 credits Internal	AS91357 2.4 Undertake effective development to make and trial a prototype 6 credits Internal
	AS91358 2.5 Demonstrate understanding of how technological modelling supports risk management 4 credits External	AS91359 2.6 Demonstrate understanding of the role of material evaluation in product development 4 credits External	AS91360 2.7 Demonstrate understanding of redundancy and reliability in technological systems 4 credits External	AS91361 2.8 Demonstrate understanding of sociocultural factors, and how competing priorities are managed, in technology 4 credits Internal
	AS91362 2.9 Demonstrate understanding of the nature of technological outcomes 4 credits Internal	AS91363 2.10 Demonstrate understanding of sustainability in design 4 credits External	AS91364 2.11 Demonstrate understanding of advanced concepts related to human factors in design 4 credits Internal	AS91365 2.12 Demonstrate understanding of advanced concepts used in manufacturing 4 credits Internal
	AS91366 2.13 Undertake development and implementation of an effective manufacturing process 6 credits Internal			
Specialist Categories of Technological Knowledge and Skills	Construction & Mechanical Technologies focuses on making and knowing how to make products and devices. <i>It is envisaged these standards will provide assessment tools for current school courses such as: hard materials, product development, textiles, automotive, furniture making, fashion, etc.</i>	Design and Visual Communication focuses on where visual literacy and creative thinking is developed, using visual communication techniques. <i>It is envisaged that these standards would provide assessment tools that school courses such as: Graphics, Product Design, and Fashion, Textiles, etc.</i>	Digital Technologies and Hangarau Matihiko focuses on applying and knowing about computational thinking and designing and developing digital outcomes. <i>It is envisaged these standards will provide assessment tools for current school courses such as: computing, digital media, information management, and electronics etc.</i>	Processing Technologies focuses on formulating and knowing how to formulate processed products. <i>It is envisaged these standards will provide assessment tools for current school courses such as: Food technology, biotechnology, chemical technology, product development, and textiles, etc.</i>
	AS91344 2.20 Implement advanced procedures using resistant materials to make a specified product with special features 6 credits Internal	AS91337 2.30 Use visual communication techniques to generate design ideas 3 credits External	AS91890 2.1 Conduct an inquiry to propose a digital technologies outcome 6 credits Internal	AS91351 2.60 Implement advanced procedures to process a specified product 4 credits Internal
	AS91345 2.21 Implement advanced procedures using textile materials to make a specified product with special features 6 credits Internal	AS91338 2.31 Produce working drawings to communicate technical details of a design 4 credits External	AS91891 2.2 Apply conventions to develop a design for a digital technologies outcome 3 credits Internal	AS91352 2.61 Demonstrate understanding of advanced concepts used in processing 4 credits Internal
	AS91347 2.22 Demonstrate understanding of advanced concepts used to make products 4 credits Internal	AS91339 2.32 Produce instrumental perspective projection drawings to communicate design ideas 3 credits External	AS91892 2.3 Use advanced techniques to develop a database 4 credits Internal	AS91353 2.62 Demonstrate understanding of advanced concepts used in preservation and packaging for product storage 4 credits Internal
	AS91346 2.23 Demonstrate understanding of advanced concepts used to make textile products 4 credits Internal	AS91340 2.33 Use the characteristics of a design movement or era to inform own design ideas 3 credits Internal	AS91893 2.4 Use advanced techniques to develop a digital media outcome 4 credits Internal	

AS91348 2.24 Demonstrate understanding of advanced concepts related to structural frameworks 3 credits Internal	AS91341 2.34 Develop a spatial design through graphics practice 6 credits Internal	AS91894 2.5 Use advanced techniques to develop an electronics outcome 6 credits Internal
AS91349 2.25 Demonstrate understanding of advanced concepts related to machines 3 credits Internal	AS91342 2.35 Develop a product design through graphics practice 6 credits Internal	AS91895 2.6 Use advanced techniques to develop a network 4 credits Internal
AS91350 2.26 Make advanced adaptations to a pattern to change the structural and style features of a design 4 credits Internal	AS91343 2.36 Use visual communication techniques to compose a presentation of a design 4 credits Internal	AS91896 2.7 Use advanced programming techniques to develop a computer program 6 credits Internal
<i>NB</i> <i>All teaching and learning programmes or courses in technology can be assessed using standards from anywhere across this matrix.</i>		AS91897 2.8 Use advanced processes to develop a digital technologies outcome 6 credits Internal
		AS91898 2.9 Demonstrate understanding of a key aspect of a computer science concept 3 credits External
		AS91899 2.10 Present a summary of developing a digital outcome 3 credits External

Generic Technology	AS91608 3.1 Undertake brief development to address an issue within a determined context 4 credits Internal	AS91609 3.2 Undertake project management to support technological practice 4 credits Internal	AS91610 3.3 Develop a conceptual design considering fitness for purpose in the broadest sense 6 credits Internal	AS91611 3.4 Develop a prototype considering fitness for purpose in the broadest sense 6 credits Internal
	AS91612 3.5 Demonstrate understanding of how technological modelling supports technological development and implementation 4 credits External	AS91613 3.6 Demonstrate understanding of material development 4 credits External	AS91614 3.7 Demonstrate understanding of operational parameters in complex and highly complex technological systems 4 credits External	AS91615 3.8 Demonstrate understanding of consequences, responsibilities and challenges involved in technology 4 credits Internal
	AS91616 3.9 Demonstrate understanding of how the fitness for purpose of technological outcomes may be broadly interpreted 4 credits Internal	AS91617 3.10 Undertake a critique of a technological outcome's design 4 credits External	AS91618 3.13 Undertake development and implementation of a green manufacturing process 6 credits Internal	AS91619 3.14 Demonstrate understanding of the application of a technical area to a specific field 4 credits Internal
Specialist Categories of Technological Knowledge and Skills	Construction & Mechanical Technologies focuses on making and knowing how to make products and devices. <i>It is envisaged these standards will provide assessment tools for current school courses such as: hard materials, product development, textiles, automotive, furniture making, fashion, etc.</i>	Design and Visual Communication focuses on where visual literacy and creative thinking is developed, using visual communication techniques. <i>It is envisaged that these standards would provide assessment tools that school courses such as: Graphics, Product Design, and Fashion, Textiles, etc.</i>	Digital Technologies and Hangarau Matihiko focuses on applying and knowing about computational thinking and designing and developing digital outcomes. <i>It is envisaged these standards will provide assessment tools for current school courses such as: computing, digital media, information management, and electronics etc.</i>	Processing Technologies focuses on formulating and knowing how to formulate processed products. <i>It is envisaged these standards will provide assessment tools for current school courses such as: Food technology, biotechnology, chemical technology, product development, and textiles, etc.</i>
	AS91620 3.20 Implement complex procedures to integrate parts using resistant materials to make a specified product 6 credits Internal	AS91627 3.30 Initiate design ideas through exploration 4 credits External	AS91900 3.1 Conduct a critical enquiry to propose a digital technologies outcome 6 credits Internal	AS91643 3.60 Implement complex procedures to process a specified product 6 credits Internal
	AS91621 3.21 Implement complex procedures using textile materials to make a specified product 6 credits Internal	AS91628 3.31 Develop a visual presentation that exhibits a design outcome to an audience 6 credits Internal	AS91901 3.2 Apply user experience methodologies to develop a design for a digital technologies outcome 3 credits Internal	This standard has been deleted and subsumed into 3.60.
	AS91622 3.22 Implement complex procedures to make a specified product using a Computer Numerical Controlled (CNC) machine 4 credits Internal	AS91629 3.32 Resolve a spatial design through graphics practice 6 credits Internal	AS91902 3.3 Use complex techniques to develop a database. 4 credits Internal	AS91644 3.62 Demonstrate understanding of combined preservation mechanisms used to maintain product integrity 4 credits Internal
	AS91623 3.23 Implement complex procedures to create an applied design for a specified product 4 credits Internal	AS91630 3.33 Resolve a product design through graphics practice 6 credits Internal	AS91903 3.4 Use complex techniques to develop a digital media outcome 4 credits Internal	
	AS91624 3.24 Demonstrate understanding of a structural system 3 credits Internal	AS91631 3.34 Produce working drawings to communicate production details for a complex design 6 credits External	AS91904 3.5 Use complex techniques to develop an electronics outcome 6 credits Internal	

	AS91625 3.25 Demonstrate understanding of a complex machine 3 credits Internal		AS91905 3.6 Use complex techniques to develop a network 4 credits Internal
	AS91626 3.26 Draft a pattern to interpret a design for a garment 6 credits Internal		AS91906 3.7 Use complex programming techniques to develop a computer program 6 credits Internal
	<i>NB</i> <i>All teaching and learning programmes or courses in technology can be assessed using standards from anywhere across this matrix.</i>		AS91907 3.8 Use complex processes to develop a digital technologies outcome. 6 credits Internal
			AS91908 3.9 Analyse an area of computer science 3 credits External
			AS91908 3.10 Present a reflective analysis of developing a digital outcome 3 credits External

Source: NCEA on TKI updated Dec 2018- <https://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Technology/Technology>