skills.

Detailed qualification conditions

NZQF Ref 2200v1 New Zealand Certificate in Telecommunications (Level 4)

(with strands in Access Network Technologies, Core Network Technologies, Radio/Wireless Technologies, Signals And Communications, Telecommunications Design, and Telecommunications Technical Service Desk)

Author: The Skills Organisation
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Qualification Requirements

Overview

This document provides detailed requirements for programmes of training leading to the award of the **New Zealand Certificate in Telecommunications (with strands in Access Network Technologies, Core Network Technologies, Radio/Wireless Technologies, Signals and Communications, Telecommunications Design, and Telecommunications Technical Service Desk) (Level 4) [Ref: 2200v1]**, and must be read in conjunction with the full qualification document registered on the New Zealand Qualifications Framework Taura Here Tohu Matauranga o Aotearoa available at www.nzqa.govt.nz. In order to promote consistency in outcomes, specific evidence requirements of assessment conducted towards the qualification are defined.

This document is subject to periodic review in order to maintain currency with industry best practice and changes to legislation and standards.

Any person or organisation may contribute to the review of this qualification by sending feedback to the qualification developer at reviewcomments@skills.org.nz

Strategic purpose statement

The purpose of this qualification is to provide the Telecommunications industry with advanced technicians who are able to operate with a broad knowledge and understanding of telecommunications technology, ensuring an efficient, reliable, and secure network.

Graduates of the Access Network, Core Network, and Radio/Wireless Technologies strands will be able to install, maintain, and repair telecommunications networks. Graduates of the Signals and Communications strand will be able to operate signals and communications equipment and networks. Strands in Design and Technical Service Desk are available for individuals who wish to further specialise in these areas.

Graduates will be able to work as advanced technicians under broad guidance in their area of practice, and be able to supervise and support technical personnel in some situations.

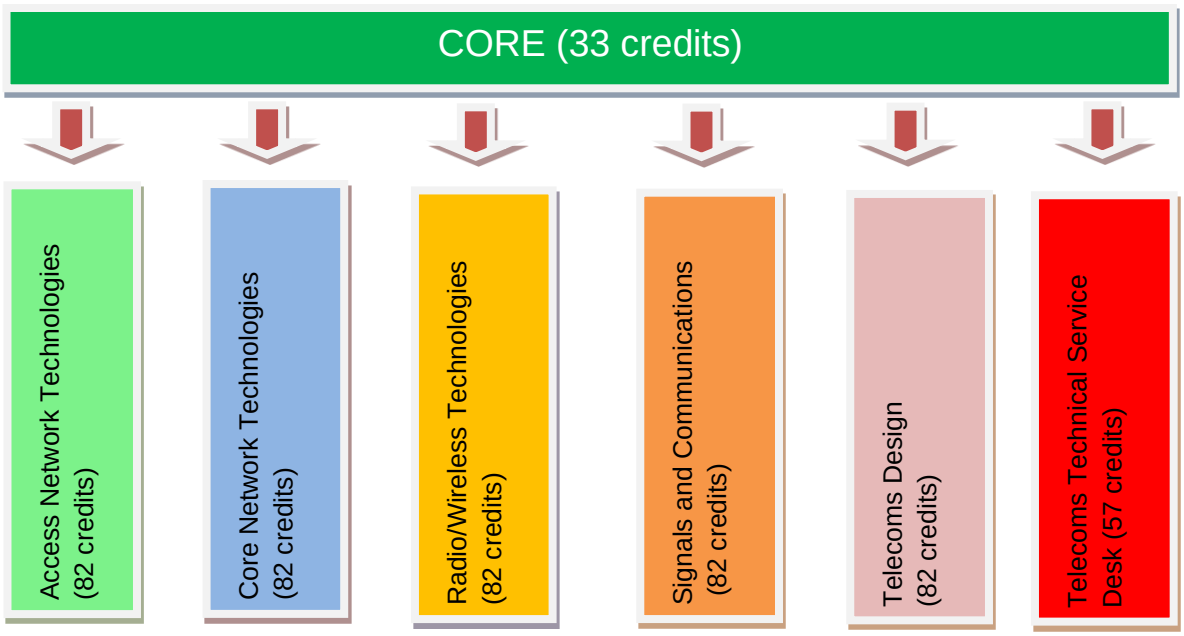
Arrangements for managing consistency

For full details of The Skills Organisation arrangements for managing consistency, contact The Skills Organisation consistency@skills.org.nz.

Qualification Structure

The New Zealand Certificate in Telecommunications (Level 4) consists of a core component and strands in Access Network Technologies, Core Network Technologies, Radio/Wireless Technologies, Signals and Communications, Telecommunications Design, and Telecommunications Service Desk. The qualification structure is shown in Fig.1.

Figure 1: Qualification Structure



Detailed Conditions

Table 1: Detailed Conditions – Qualification Core

Qualification Core		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Communicate effectively to provide support and solutions for stakeholders and supervision of personnel Credit value: 7	**Programmes must include:** ▪ Principles of communication and service techniques to manage tensions during stakeholder engagement ▪ Supervision and support of technical projects and personnel ▪ Demonstration of strong written and oral communication skills ▪ Negotiation techniques appropriate to internal and external stakeholders including communication of expectations and gaining agreement.	Telecommunication unit standards to support this qualification are under review. This column will be updated when that review has concluded.
Apply business policies and procedures including management of information and records Credit value: 10	**Programmes must include:** ▪ Apply appropriate and relevant business policies and procedures (SOPs, OSH QMS, legislation) ▪ End to end workflow and systems ▪ Physical network information and systems e.g. GIS ▪ Logical network information and systems i.e. service and address.	
Maintain a safe working environment and implement hazard management policies and procedures Credit value: 8	**Programmes must include:** ▪ Management of environmental situations within a workplace ▪ Planning and enhancement of safe working practices and procedures Application of risk analysis/management techniques to review and identify risks in the workplace.	
Apply relevant industry, community, government and environmental regulations and standards Credit value: 5	**Programmes must include:** ▪ Awareness of community and cultural protocols ▪ Management of environmental situations within a workplace	
Maintain advanced knowledge of current and emerging technologies and develop knowledge in their area of practice	**Programmes must include:** ▪ Knowledge of emerging technologies in the context of improved business efficiencies and potential competitive advantage ▪ Training programmes relating to new technology	

Qualification Core		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Credit value: 3	and services ▪ This outcome must be related to the candidate's area of workplace practice.	

Table 2: Detailed Conditions – Access Networks Technologies Strand

Access Networks Technologies Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Develop and apply a range of standard and non-standard processes and solutions to the installation, maintenance, and repair of telecommunications networks and equipment Credit value: 32	**Programmes must include knowledge and application of:** ▪ AS/NZS 3080:2003 - Telecommunications installations - Generic cabling for commercial premises, AS/NZS 3084:2003 - Telecommunications installations - Telecommunications pathways and spaces for commercial buildings and the recommended guidelines, The TCF Premises Wiring Code of Practice 2010. ▪ Regulatory requirements including any acts of Parliament, regulations, standards, codes of practice and acceptable solutions that may impact on complex installation, maintenance, or repair activity ▪ Safety considerations with regard to installing complex access network technologies equipment ▪ access networks technologies and architectures to complex or enterprise solutions ▪ Interpretation of plans ▪ Design requirements ▪ Optimisation of cost, risk, resources and performance to complex or enterprise solutions ▪ Standards and factors influencing performance and stability of a complex or enterprise network ▪ Produce and interpret technical reports and/or data ▪ Processes for complex fault analysis and restoration	Note: Graduates that have completed on of the strands below will have already achieved this outcome (as it is common across these strands). ▪ Core Network Technologies strand ▪ Radio/Wireless Technologies strand ▪ Design strand Telecommunication unit standards to support this qualification are under review. This column will be updated when that review has concluded.
Install and maintain network equipment and services across a broad range of situations Credit value: 25 Install and maintain networks ICT systems and services across a broad range of situations Credit value: 5 Diagnose and repair	**These practical skills are to be assessed in a real work environment and include:** ▪ Implementation of types of access networks technologies including access networks in terms of the services delivered and role of three components used in access networks ▪ Coordinate commissioning, analysis, and testing of performance characteristics of network access services ▪ Implementation of ICT equipment for complex systems ▪ Testing and commissioning of ICT systems ▪ Advanced test and measurement methods, units	

Access Networks Technologies Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
networks equipment and services across a broad range of situations Credit value: 20	of measurement, and interpretation of results ▪ Advanced fault location techniques ▪ Repair procedures for complex faults: six different faults including three copper services and three fibre services	

Table 3: Detailed Conditions – Core Networks Technologies Strand

Core Networks Technologies Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Develop and apply a range of standard and non-standard processes and solutions to the installation, maintenance, and repair of telecommunications networks and equipment Credit value: 32	**Programmes must include knowledge and application of:** ▪ AS/NZS 3080:2003 - Telecommunications installations - Generic cabling for commercial premises, AS/NZS 3084:2003 - Telecommunications installations - Telecommunications pathways and spaces for commercial buildings and the recommended guidelines, The TCF Premises Wiring Code of Practice 2010. ▪ Regulatory requirements including any acts of Parliament, regulations, standards, codes of practice and acceptable solutions that may impact on complex installation maintenance, or repair activity ▪ Safety considerations with regard to installing complex core network technologies equipment ▪ core networks technologies and architectures to complex or enterprise solutions ▪ Interpretation of plans ▪ Design requirements ▪ Optimisation of cost, risk, resources and performance to complex or enterprise solutions ▪ Standards and factors influencing performance and stability of a complex or enterprise network ▪ Produce and interpret technical reports and/or data ▪ Processes for complex fault analysis and restoration	Note: Graduates that have completed on of the strands below will have already achieved this outcome (as it is common across these strands). ▪ Access Network Technologies strand ▪ Radio/Wireless Technologies strand ▪ Design strand Telecommunication unit standards to support this qualification are under review. This column will be updated when that review has concluded.
Install and maintain networks ICT systems and services across a broad range of situations 5 Credits Diagnose and repair network equipment and services 20 Credits	**These practical skills are to be assessed in a real work environment and include:** ▪ Implementation of types of core networks technologies in terms of the services delivered and role of three components used in core networks ▪ Coordinate commissioning, analysis, and testing of performance characteristics of core network services ▪ Implementation of ICT equipment for complex systems ▪ Testing and commissioning of ICT systems ▪ Advanced test and measurement methods, units	

Core Networks Technologies Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
	of measurement, and interpretation of results ▪ Advanced fault location techniques ▪ Repair procedures for complex faults: six different faults including three copper services and three fibre services	

Table 4: Detailed Conditions – Radio/Wireless Technologies Strand

Radio/Wireless Technologies Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Develop and apply a range of standard and non-standard processes and solutions to the installation, maintenance, and repair of telecommunications networks and equipment Credit value: 32	**Programmes must include knowledge and application of:** ▪ AS/NZS 3080:2003 - Telecommunications installations - Generic cabling for commercial premises, AS/NZS 3084:2003 - Telecommunications installations - Telecommunications pathways and spaces for commercial buildings and the recommended guidelines, The TCF Premises Wiring Code of Practice 2010. ▪ Regulatory requirements including any acts of Parliament, regulations, standards, codes of practice and acceptable solutions that may impact on complex installation, maintenance, or repair activity ▪ Safety considerations with regard to installing complex access network technologies equipment ▪ access networks technologies and architectures to complex or enterprise solutions ▪ Interpretation of plans ▪ Design requirements ▪ Optimisation of cost, risk, resources and performance to complex or enterprise solutions ▪ Standards and factors influencing performance and stability of a complex or enterprise network ▪ Produce and interpret technical reports and/or data ▪ Processes for complex fault analysis and restoration	Note: Graduates that have completed on of the strands below will have already achieved this outcome (as it is common across these strands). ▪ Access Network Technologies strand ▪ Core Network Technologies strand ▪ Design strand Telecommunication unit standards to support this qualification are under review. ▪ This column will be updated when that review has concluded.
Install and maintain network equipment and services across a broad range of situations Credit value: 25 Install and maintain networks ICT systems and services across a broad range of situations Credit value: 5 Diagnose and repair	**These practical skills are to be assessed in a real work environment and include:** ▪ Implementation of types of radio/wireless networks technologies in terms of the services delivered and role of three components used in radio/wireless networks ▪ Coordinate commissioning, analysis, and testing of performance characteristics of radio/wireless network services ▪ Implement ICT equipment for complex systems ▪ Testing and commissioning of ICT systems ▪ Advanced test and measurement methods, units	

Radio/Wireless Technologies Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
networks equipment and services across a broad range of situations Credit value: 20	of measurement, and interpretation of results ▪ Advanced fault location techniques	

Table 5: Detailed Conditions – Signals and Communications Strand

Signals and Communications Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Develop and apply a range of standard and non-standard processes and solutions to the installation, maintenance, and repair of telecommunications technologies and equipment Credit value: 32	**Assessment is to be conducted in a NZ Defence environment**	Telecommunication unit standards to support this qualification are under review. This column will be updated when that review has concluded.
Apply advanced knowledge of radio communication Credit value: 10	**Assessment is to be conducted in a NZ Defence environment**	
Apply advanced knowledge of tactical communication Credit value: 10	**Assessment is to be conducted in a NZ Defence environment**	
Manage and operate advanced strategic information systems Credit value: 10	**Assessment is to be conducted in a NZ Defence environment**	
Manage communications protocols and procedures during shift and shift change over Credit value: 10	**Assessment is to be conducted in a NZ Defence environment**	
Manage maintenance requirements of signals and communications technologies and equipment Credit value: 10	**Assessment is to be conducted in a NZ Defence environment**	

Table 6: Detailed Conditions – Telecommunications Design Strand

Telecommunications Design Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Develop and apply a range of standard and non-standard processes and solutions to the installation, maintenance, and repair of telecommunications networks and equipment Credit value: 32	**Programmes must include knowledge and application of:** ▪ AS/NZS 3080:2003 - Telecommunications installations - Generic cabling for commercial premises, AS/NZS 3084:2003 - Telecommunications installations - Telecommunications pathways and spaces for commercial buildings and the recommended guidelines, The TCF Premises Wiring Code of Practice 2010. ▪ Regulatory requirements including any acts of Parliament, regulations, standards, codes of practice and acceptable solutions that may impact on complex installation, maintenance, or repair activity ▪ Safety considerations with regard to installing complex access network technologies equipment ▪ access networks technologies and architectures to complex or enterprise solutions ▪ Interpretation of plans ▪ Design requirements ▪ Optimisation of cost, risk, resources and performance to complex or enterprise solutions ▪ Standards and factors influencing performance and stability of a complex or enterprise network ▪ Produce and interpret technical reports and/or data ▪ Processes for complex fault analysis and restoration	Note: Graduates that have completed on of the strands below will have already achieved this outcome (as it is common across these strands). ▪ Access Network Technologies strand ▪ Core Network Technologies strand ▪ Radio/Wireless Technologies strand Telecommunication unit standards to support this qualification are under review. This column will be updated when that review has concluded.
Prepare design within defined parameters Credit value: 15	**Programmes must include knowledge and application of:** ▪ Preparation of design drawings, specifications, and associated documentation ▪ Development of detailed technical design ▪ Detailed specification of design implementation	
Prepare an estimate against completed design Credit value: 15	**Programmes must include knowledge and application of:** ▪ Preparation of estimate and quotation for telecommunications equipment and installations	
Evaluate design against	**Programmes must include knowledge and application of:**	

Telecommunications Design Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
stakeholder requirements Credit value: 15	▪ Comparison of design against requirements ▪ Confirmation of design ▪ Feedback mechanisms on design changes	
Submit design and estimate into workflow process Credit value: 15	**Programmes must include knowledge and application of:** ▪ Development of installation activity schedule that complies with regulations and standards ▪ Availability of equipment and technologies including material supplies, safety equipment, resources, tools, test equipment ▪ Compatibility with existing network equipment	

Table 7: Detailed Conditions – Telecommunications Technical Service Desk Strand

Telecommunications Technical Service Desk Strand		
QUALIFICATION OUTCOMES	CONDITIONS - MANDATORY	RECOMMENDED UNIT STANDARDS
Develop a range of standard and non-standard processes and solutions to the installation, maintenance, and repair of telecommunications network Credit value: 12	**Programmes must include knowledge and application of:** ▪ Relevant product and service parameters in the context of the OSI and TCPIP models. ▪ How relevant products and services operate in the context of the telecommunications network and network elements. ▪ Provision of continuous improvement opportunities.	Telecommunication unit standards to support this qualification are under review. This column will be updated when that review has concluded.
Receive and resolve technical and service requirement Credit value: 15	**Programmes must include knowledge and application of:** ▪ How to view all inbound work and make prioritisation decisions. ▪ SLA/OLA parameters for relevant products, services, and workflows. ▪ Standard operating procedures for helpdesk and operational workflows. ▪ Appropriate end to end fault troubleshooting methodologies. ▪ Management of escalations within the prescribed process.	
Effectively communicate technical and service information to stakeholders Credit value: 15	**Programmes must include knowledge and application of:** ▪ Effective customer service skills to field staff and end customers. ▪ Variation of communication style to suit the relevant stakeholders. ▪ Provision of coaching and leadership to team members to facilitate continuous improvement.	
Use helpdesk systems and equipment Credit value: 15	**Programmes must include knowledge and application of:** ▪ The principles and use of relevant workflow systems, physical network record systems, and logical records systems.	