



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Final date for issue of award is 31 December 2008

NEW ZEALAND CERTIFICATE IN ENGINEERING - TELECOMMUNICATIONS

WORK EXPERIENCE GUIDELINES

Aim of Work Experience

The aim of the work experience component for the New Zealand Certificate in Engineering is to supplement and integrate the academic learning with practical knowledge and experience, and hence to develop further competence in technician engineering through actual on-job experience.

Sources of Suitable Experience

Telecommunications engineering is concerned primarily with broadcasting, transmission networks, switching systems, mobile communications, marine electronics and systems using radio propagation.

Relevant work experience can come from the following fields: television and radio broadcasting, telecommunications network operations, telecommunications manufacturers, utility companies, emergency services, aviation and marine operations, government enterprises and telecommunications consultancy companies.

Advising the Employer

The candidate's employer should be advised by the candidate of the requirements of these guidelines, preferably prior to the candidate commencing employment but in any event as early as possible in the work experience, in order to ensure that the employer is aware of the type of experience required and can make the appropriate arrangements to provide it.

Core Expectations

Basic Academic Knowledge

The basic academic knowledge will be acquired through a course of full or part time study generally at a polytechnic. Often this study is completed prior to commencing work experience. The requirements are specified in the Qualifications Authority's Advanced Vocational Awards Handbook.

Breadth

A broad range of experience is desirable including exposure to investigation, design or development, supervision, management, testing, operating, installing, commissioning and servicing. The work undertaken towards NZCE should have a variety of activities that require thought as to method, reliability, cost, and commercial as well as engineering factors. An exposure to real situations and equipment is advisable, as this will give an appreciation of what is feasible and practical in the design and operation of systems. A candidate should also be able to appreciate projects as a whole from specification through to completion, even if involved in only a small part.

It is expected that a candidate will exhibit skills that show a broad understanding of systems and processes, both technical and managerial, rather than only having knowledge of individual items of equipment, small parts of a manufacturing process, or limited commercial understanding.

Level of Accomplishment

On completion of academic and work experience the candidate should be capable of self-directed work, leading small teams, making judgements covered by defined methods or procedures, and then deciding, using readily available information, which procedure, system or component to use. This level of accomplishment should be achieved in one or more of the following generic areas:

- general engineering of telecommunications equipment and systems
- technical management
- technical support for marketing.

Work Experience Credit for Related Qualifications

Between six months and eighteen months work experience may be credited from a completed apprenticeship, a Trade Certificate, an Advanced Trade Certificate or a National Certificate at level 3 or above in any relevant area from the following:

- telecommunications
- electrical
- electronics or related fields.

The time credited will be determined according to the details recorded in the Work Experience Record Book. Candidates should submit a certified copy of the certificate of completion of apprenticeship, Trade Certificate, Advanced Trade Certificate or National Certificate (a certified copy is one which is signed by a legally authorised person such as a justice of the peace, a solicitor, or a notary public as an authentic copy of the original).

It may be possible that time can be credited from qualifications other than those above. Advice should be sought from the Qualifications Authority.

Fundamental Practical Knowledge

Candidates should be able to demonstrate by the type of work undertaken during their work experience that they understand the capabilities, limitations and important requirements governing the use of the particular processes, devices or equipment. The work must include sufficient practical experience, either hands-on or by direct observation, to enable candidates to have a general understanding of most of the following:

- using meters, tools and working with coding of electronic components
- undertaking cabling and switching
- working with (producing and/or reading) technical drawings
- using and calibrating equipment
- developing safe practices for work environments and working within statutory or industry standards for safety.

NZCE Work Experience Relevant to Telecommunications

Candidates should gain experience in the following fields - investigation, design and development, supervision, management, testing, operating, installing, commissioning, and undertaking maintenance. These experiences may be gained in telecommunications equipment and systems, and at least one of technical management and technical support for marketing (see below).

Note that the items in the following lists are not to be regarded as having equal weighting; it is important that the candidate completes a wide range of activities in the fields listed in the previous paragraph. The process of approving Work Experience Record Books will be assisted by cross-referencing activities entered in the book to these activities.

1 Telecommunications Equipment and Systems

This area includes the design, construction, installation, commissioning and maintenance of telecommunication systems and equipment, and includes trouble-shooting, testing, finding and diagnosing faults.

- 1.1 Installing, commissioning and maintaining public network exchange, transmission, switching and testing equipment.
- 1.2 Installing and maintaining telephone and data equipment and associated cabling.
- 1.3 Designing equipment for manufacture and the processes necessary to ensure cost-effectiveness.
- 1.4 Installing, commissioning and maintaining land mobile radio equipment and systems.

- 1.5 Installing, commissioning and maintaining mobile telephone equipment, including the fixed sites and exchanges.
- 1.6 Installing, commissioning and maintaining PABX systems and associated cabling.
- 1.7 Designing, installing, and maintaining underground cable plant for both copper and fibre optic cables.
- 1.8 Installing, commissioning and maintaining television studio and transmission equipment.
- 1.9 Installing, commissioning and maintaining radar equipment.
- 1.10 Installing and maintaining radio and television transmissions.
- 1.11 Designing radio links and installing, commissioning and maintaining microwave radio equipment.
- 1.12 Surveying, installing, commissioning and maintaining marine radio and sonar equipment.
- 1.13 Installing, commissioning and maintaining primary and secondary airport communication control systems and equipment.
- 1.14 Installing, commissioning and maintaining aeronautical fixed telecommunications network equipment and cable systems.
- 1.15 Installing, commissioning and maintaining navigational equipment and systems.
- 1.16 Using and maintaining meteorological radiosonde equipment.

2 Technical Management

This area includes work undertaken in conjunction with qualified seniors for electrical engineering and telecommunications, and may include mechanical and civil engineering.

- 2.1 Managing production processes and projects.
- 2.2 Supervising technical facilities and staff.
- 2.3 Scheduling work flow and maintenance activities.
- 2.4 Estimating costs and quantities.
- 2.5 Establishing and supervising systems for quality control and quality assurance.

3 Technical Support for Marketing

This area includes work undertaken for client servicing.

- 3.1 Analysing customers' business needs and researching telecommunications solutions to meet those needs.
- 3.2 Preparing business cases for solutions and presenting these to customers.
- 3.3 Managing the installing and commissioning of systems for customers.
- 3.4 Trouble-shooting, diagnosing and resolving faults.
- 3.5 Promoting and presenting technical products and systems.

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