



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Final date for issue of award is 31 December 2008

NEW ZEALAND CERTIFICATE IN ENGINEERING ELECTRONICS AND COMPUTER TECHNOLOGY

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

Electronics and computer technology engineering covers all aspects of navigational systems, aeronautical controls, television, radio communications, broadcasting, and computing (including both hardware and software). It can include design, manufacture, installation and maintenance of electronic systems and equipment.

Employers who can provide suitable work experience include those in aviation, television and radio companies, computer sales and service companies, and many others dealing in electronic and computer systems and equipment. There are also opportunities in radio/telephone manufacture and servicing.

Advising the Employer

The candidate should advise his/her employer of these guideline requirements, preferably prior to the candidate commencing employment but in any event as early as possible in the work experience, to ensure that the employer is:

- aware of the type of experience required
- 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 academic requirements are specified in the

Qualifications Authority's Advanced Vocational Awards Handbook.

Breadth

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 also should 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.

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:

- electronic equipment servicing
- electronic equipment manufacture
- television
- radio
- computers.

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.

1. **Electronic and Computer Equipment**

This category includes the design, construction, installation, commissioning and maintenance of computer equipment systems and other electronic equipment, and includes trouble-shooting, testing, finding, and diagnosing faults.

- 1.1 Supporting systems and/ or application software
- 1.2 Testing and debugging software
- 1.3 Finding and repairing faults
- 1.4 Designing and developing new equipment to meet defined needs
(e.g. interfaces for peripherals, warning devices)
- 1.5 Installing new equipment and adding extras to existing equipment
- 1.6 Servicing equipment in the field and/ or in the workshop
- 1.7 Applying and administering programming standards
- 1.8 Developing software
- 1.9 Establishing computer systems and operations controls
- 1.10 Performing the functions of a operator in support of computer systems
- 1.11 Performing media library functions
- 1.12 Installing, commissioning and maintaining data communication
equipment and networks
- 1.13 Managing data communication and networks
- 1.14 Diagnosing and rectifying hardware faults
- 1.15 Designing and/ or constructing microprocessor-based equipment
- 1.16 Designing and/ or constructing electronic-based equipment

2. **Technical Management**

This category includes work undertaken in conjunction with qualified supervisors for electrical engineering and telecommunications.

- 2.1 Managing production processes and projects, and program
development
- 2.2 Supervising technical operations, 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
- 2.6 Auditing computer systems

Fundamental Practical Knowledge

The work must include sufficient practical experience, either hands-on or by direct observation, to enable the candidate to have a general understanding of

most of the following:

- Using meters, instruments and tools for servicing electronic equipment
- Installing computer networks
- Working with technical drawings
- Using and calibrating measuring and test equipment
- Developing safe practices for work environments and working within statutory or industry standards for safety

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.

NZCE Work Experience Relevant to Electronics and Computer Technology

Through work experience, the candidate needs to gain experience in at least one of the following fields:

- television broadcasting
- radio broadcasting
- navigational systems
- electronic equipment manufacture
- computer installations
- computer software
- manufacture of radio/telephone equipment.

A broad range of experience is required in activities such as servicing, investigation, design or development, supervision, management, testing, operating, installing and commissioning and providing technical support.