



through



# **CERTIFICATE IN ENGINEERING TECHNOLOGY**

***2012***  
**Programme  
Information**



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# **Certificate in Engineering Technology**

**[Programme Code: TK1003]**

## **1. AIMS**

This certificate aims to provide a good grounding in engineering science and technical methods. Depending on the strand chosen graduates will gain broad knowledge covering one of the following areas:

- Engineering fundamentals
- Civil engineering planning
- Highway construction
- Water utility operations

Certificate courses give a good foundation for further engineering studies at Level 5 and 6:

- Diploma in Engineering Technology (Highways) and
- NZ Diploma in Engineering (Civil).

Graduates of this Programme may be employed in the civil infrastructure industry in various roles such as engineering cadet, worksite team leader and assistant project engineer.

NZIHT, through the Western Institute of Technology at Taranaki (WITT), offers this programme on a part time basis using a mixed-mode delivery format. This method of delivery caters specifically for the needs of students who are unable to attend a conventional full-time programme. More details on the method of delivery are given in Section 5.

## **2. GRADUATE PROFILE**

### **Strand A: Core Engineering Courses**

A graduate from this Programme will be able to:

- use a wide range of knowledge to display an understanding of technical literacy, engineering communication and interpersonal communication skills
- demonstrate knowledge of basic engineering drawing techniques and standards to communicate and present ideas
- demonstrate knowledge of the fundamental mathematical and engineering science skills required to engage in higher level diploma studies

### **Strand B: Highway Engineering Courses**

A graduate from this Programme will be able to:

- apply engineering knowledge and skills to measure, estimate, calculate, investigate and plan general civil engineering projects of moderate scope
- identify and evaluate information from a variety of documents including technical specifications, engineering standards and codes of practice
- relate theory to the solution of standard and non-standard engineering problems of moderate scope in a highway engineering environment
- be accountable for the quality and quantity of their own work output and on occasions take responsibility for the work output of others

- demonstrate knowledge of the fundamental highway engineering skills required to engage in higher level diploma studies in this discipline

### **Strand C: Civil Engineering Courses**

A graduate from this Programme will be able to:

- apply engineering knowledge and skills to measure, estimate, calculate, investigate and plan general civil engineering projects of moderate scope
- identify and evaluate information from a variety of documents including technical specifications, engineering standards and codes of practice
- relate theory to the solution of standard and non-standard engineering problems of moderate scope in a civil engineering environment
- be accountable for the quality and quantity of their own work output and on occasions take responsibility for the work output of others.

### **Strand D: Water Utilities Engineering Courses**

- display an understanding of technical literacy and basic engineering science knowledge relevant to the water industry
- demonstrate computational skills required to carry out computations relevant to the water utilities industry
- apply engineering knowledge and skills to supervise the installation and maintenance of water and wastewater reticulations systems
- evaluate the requirements of and design water, waste water and storm water reticulation systems
- Demonstrate knowledge of the basic fundamentals of water, waste water and solid waste treatment and disposal methods

Courses within this Programme may be credited towards a higher level diploma programme of study.

## **3. ENTRY CRITERIA**

### **Academic Achievement**

Applicants should demonstrate an ability to succeed in tertiary study, shown by the completion of any of the following qualifications or courses of study:

- A minimum of three years of secondary education; and
- 48 or more credits at NCEA Level 1, with no fewer than 12 credits in each of four subjects; and/or
- Equivalent NQF Unit Standards

Applicants whose first language is not English, or who come from a country where the language of instruction in schools or other teaching institutions is not English, are required to provide evidence of having passed such tests of English language competence as the Academic Board will from time to time approve.

### **Life Skills/Work Experience**

Applicants who do not meet the academic entry criteria above may be admitted to the Programme of study if they are able to demonstrate:

- Equivalent knowledge and skills; and/or

- Previous and relevant life skills or work experience; and/or
- Other formal or informal study such as to suggest likelihood of successful Programme completion.

## Selection criteria

Entry to the Programme will be in order of receipt of enrolments by applicants who meet the entry criteria above.

Applicants seeking entry to the Programme under the Life Skills/Work Experience clause of the entry criteria above, may be required to attend an interview, and/or supply references or other supporting documentation.

## Acceptance

Candidates wishing to enrol for the Certificate in Engineering Technology must complete the Entry Assessment Form and return it with supporting documentation to the Programme Administrator for evaluation.

Following the review of the applications by the Programme Manager each candidate will be informed in writing of the result. There is a requirement that candidates accepted onto the Programme must, for the purposes of obtaining the Certificate, complete a Western Institute of Technology at Taranaki (WITT) Student Study Contract (enrolment form).

Applicants will receive the Student Study Contract for WITT when they are notified of their acceptance onto the Programme.

Please note a student is confirmed onto the Programme when NZIHT has received a Student Study Contract from the student. A confirmation letter giving final course details will be issued prior to the start of the first block course.

## 4. PROGRAMME STRUCTURE

Students must elect do one or more of the following certificate strands:

- Core Engineering
- Civil Engineering
- Highways Engineering
- Water Utilities Engineering

**Note:** Foundation course electives are offered to help students in their study of each strand. Students may elect to do any number of foundation courses. However, only ONE 15 credit foundation course will count towards the total 60 credits required for a certificate. Foundation courses may not contribute towards the 60 credits required via RPL.

## Schedule of courses offered

**Table 1 - Certificate in Engineering Technology Courses  
Elective Foundation Courses**

CODE	COURSE TITLE	SEE NOTE 1	LEVEL	CREDITS	PRE OR CO REQUISITES
<i>ONE only foundation course can be used for credit towards award of a certificate</i>					
CET2.001	Core Engineering Skills	E	2	15	
CET2.002	Core Skills (Civil & Highway)	E	2	15	
CET3.001	Introduction to CAD	E	3	15	
CET3.002	Mathematics (Introduction)	E	3	15	
<b>Total Credits that can be used for award of this certificate</b>				<b>15</b>	

**Note:** Not all foundation or strand electives will be offered in any one year. Courses will only be offered if there is sufficient demand to ensure viability.

## Strand A – Core Engineering Courses

CODE	COURSE TITLE	C OR E <sup>1</sup>	LEVEL	CREDITS	PRE OR CO REQUISITES
<i>Students must complete the compulsory course plus at least TWO strand electives</i>					
<b>CET4.113</b>	<b>Technical Literacy</b>	<b>C</b>	<b>4</b>	<b>15</b>	
CET4.111	Engineering Fundamentals	E	4	15	CET3.002 - Co
CET4.112	Mathematics 1	E	4	15	CET3.002 - Pre
CET4.211	Materials (Civil)	E	4	15	
CET6.101	Engineering Management	E	6	15	
<b>Total Strand A Credits Required</b>				<b>45 or 60</b>	Note 2 Below

**Note<sup>1</sup>:** Code Key: C=Compulsory; E=Elective..

**Note<sup>2</sup>:** Students may select ONE Elective Foundation course plus THREE Strand A courses OR FOUR Strand A courses - a total of 60 credits is required including the Strand Compulsory course.

## Strand B – Highway Engineering Courses

CODE	COURSE TITLE	C OR E <sup>1</sup>	LEVEL	CREDITS	PRE OR CO REQUISITES
<i>Students must complete the compulsory course plus at least TWO strand electives</i>					
<b>CET5.204</b>	<b>Highway Engineering 1</b>	<b>C</b>	<b>5</b>	<b>15</b>	CET2.002 – Co <sup>3</sup>
CET4.212	Land Surveying 1	E	4	15	CET2.002 – Co <sup>3</sup>
CET5.207	Geotechnical Engineering 1	E	5	15	CET2.002 – Co <sup>3</sup>
CET6.101	Engineering Management (Civil)	E	6	15	
CET6.202	Highway Engineering 2	E	6	15	CET5.204 - Pre
<b>Total Strand B Credits Required</b>				<b>45 or 60</b>	Note 2 Below

**Note<sup>1</sup>:** Code Key: C=Compulsory; E=Elective..

**Note<sup>2</sup>:** Students may select ONE Elective Foundation course plus THREE Strand B courses OR FOUR Strand B courses - a total of 60 credits is required including the Strand Compulsory course.

**Note<sup>3</sup>:** Applicants who can provide evidence of appropriate prior learning and/or work experience can, with the approval of the Programme Manager, be exempted from this co-requisite requirement.

## Strand C – Civil Engineering Courses

CODE	COURSE TITLE	C OR E <sup>1</sup>	LEVEL	CREDITS	PRE OR CO REQUISITES
<i>Students must complete at least THREE of the following strand electives</i>					
CET4.211	Materials (Civil)	E	4	15	
CET4.212	Land Surveying 1	E	4	15	CET2.002- Co <sup>3</sup>
CET5.207	Geotechnical Engineering 1	E	5	15	CET2.002 – Co <sup>3</sup>
CET4.215	Civil Construction Supervision	E	4	15	
CET5.201	Structures 1	E	5	15	CET4.111 - Pre
CET5.202	Civil and Structural Drawing	E	5	15	CET4.113 - Pre
CET5.203	Hydraulics (Civil)	E	5	15	CET4.112 - Pre
CET6.101	Engineering Management	E	6	15	
<b>Total Strand C Credits Required</b>				<b>45 or 60</b>	Note 2 Below

**Note<sup>1</sup>:** Code Key: C=Compulsory; E=Elective.

**Note<sup>2</sup>:** Students may select ONE Elective Foundation course plus THREE Strand C courses OR FOUR Strand C courses - a total of 60 credits is required.

**Note<sup>3</sup>:** Applicants who can provide evidence of appropriate prior learning and/or work experience can, with the approval of the Programme Manager, be exempted from this co-requisite requirement.

## Strand D – Water Utilities Engineering Courses

CODE	COURSE TITLE	C OR E <sup>1</sup>	LEVEL	CREDITS	PRE OR CO REQUISITES
<i>Students must complete the compulsory course plus at least TWO strand electives</i>					
<b>CET4.213</b>	<b>Core Engineering Skills (Water)</b>	<b>C</b>	<b>4</b>	<b>15</b>	
CET4.214	Water & Wastewater (Introduction)	E	4	15	
CET6.205	Water & Wastewater Systems	E	6	15	CET4.213 – Pre CET4.214 - Pre
CET6.206	Water & Waste Management	E	6	15	CET4.214 - Pre
CET6.101	Engineering Management	E	6	15	
<b>Total Strand D Credits Required</b>				<b>45 or 60</b>	<small>Note 2 Below</small>

**Note<sup>1</sup>:** Code Key: C=Compulsory; E=Elective.

**Note<sup>2</sup>:** Students may select ONE Elective<sup>4</sup> from within the Programme, plus THREE Strand D courses OR FOUR Strand D courses - a total of 60 credits is required including the Strand Compulsory course.

**Note<sup>4</sup>** This elective can, with the approval of the Programme Manager, be selected from the Foundation courses or any of the other Strands with a coherent relationship with Strand D study Programme.

## Course Fees

The cost of each course is **\$640 including GST**.

## Programme length

This is a 20 week, full-time programme of study which can also be completed part time over two years.

## 5. METHOD OF DELIVERY

### 5.1 Block Courses

A combination of contact sessions, called **Study Blocks**, and structured self-directed study is used to deliver the programme. The self-directed study component is undertaken in the student's own time at home with the aid of course notes and a proposed work programme. Interaction with the course presenter as and when required is via e-mail or telephone. Interaction with the course presenter and fellow students can also be made through the Course Management System website (NZIHTCMS).

The length of the **Study Blocks** varies according to the nature of individual courses. The typical duration is about 5 days per course.

This method of delivery enables candidates to acquire the qualification on a part-time basis. A person in full-time employment, who is willing to work hard, should be able to undertake 2 to 3 courses per semester. On this basis the programme can be completed in 1 year.

The current venues where Study Blocks are delivered, subject to demand, are Hamilton, Christchurch, Auckland and Palmerston North.

### 5.2 Block Course Format

The learning activities for each course comprise the following components:

1. Contact session(s), referred to as **Study Blocks**, totalling between 3 and 7 days approximately, normally broken into two blocks of equal duration per course. (3 Study Block for CET3.002 Mathematics Introduction and CET4.112 Mathematics 1)
2. Structured **self-directed study** involving Self Evaluation Exercises and Assignments.

### 3. Final Examination.

The Study Block **time tables** for courses offered in 2012 are given in **Appendix A**.

While the block course format, in essence, is a part-time study format specifically designed to cater for persons who are not in a position to attend full-time programmes, it is not a pure “correspondence course”.

The course materials have not been designed to be completely “stand-alone”. The Study Blocks fulfil an important supplementary role to the self-directed study component. Experience has shown that block course attendance is important for all courses.

There are, however, special circumstances where attendance of block courses can be waived by the Programme Manager, for instance where students can offer prior learning or appropriate work-place experience *in lieu*. Please contact the course administrator for more information.

## 5.3 Course Management System

Candidates accepted onto the Programme need independent access to the internet. NZIHT has introduced a Course Management System Website (CMS for short) to facilitate the interaction between fellow students, tutors and administrators of the Programme.

The address is [www.nzihtcms.co.nz](http://www.nzihtcms.co.nz)

CMS is a website where:

- Administration staff post some of the admin resources commonly required by the student and communicates logistics, including venue and timetable information
- Students can ask course related questions of the course presenters
- Course presenters can discuss course related matters or disseminate additional information (including model answers for tests and assignments)
- Question-and-answer discussion trails (discussion forum) can be facilitated among members of a class group (including the course presenter)
- Marks for tests and assignments are posted during the progress of courses

Students are provided with a user name and password to gain access to the site and its facilities.

## 6. RECOGNITION OF PRIOR LEARNING (RPL)

### Transition Arrangements

Students who still qualify for study towards the Certificate in Industrial Draughting may:

- complete Certificate in Industrial Draughting studies before the end of 2012 and graduate under the provisions of the old January 2009 regulations or
- transfer to complete their studies under the Certificate in Engineering Technology regulations. Such students may apply for RPL for the courses as detailed in Table 2.



**Table 2 – RPL Arrangements for Transitioning of Students**

COURSE CODE CID	CERTIFICATE IN INDUSTRIAL DRAUGHTING COURSE TITLE	COURSE CODE CET	CERTIFICATE IN ENGINEERING TECHNOLOGY COURSE TITLE
2.002	Engineering Mathematics	3.002	Mathematics (Introduction)
4.103	Engineering Drawing and CAD 1	3.001	Introduction to CAD

It is important for candidates to supply copies of results transcripts to enable the Programme Manager to give advice on eligibility.

## **7. HOW TO APPLY**

Complete the attached Entry Assessment Form and send it to the address given below. Attach any additional information or documents (e.g. CV) that may assist the Programme Manager in determining your eligibility to enroll for the Programme and advice on which courses you should enrol for.

Once your eligibility and subject choices have been confirmed, you will be sent an enrolment form.

### **Enrolment:**

Semester 1 courses:                      Enrolment forms are received from November until late January.  
Please enroll as early as possible.  
Students may enroll for Semester 1 & 2 at the beginning of the academic year.

Semester 2 courses:                      June through middle July.

## **8. CONTACT DETAILS FOR INQUIRIES**

The Programme Administrator  
NZIHT  
PO Box 27050  
Garnett Avenue  
Hamilton 3257

Tel :    (07) 850 8330  
Fax :    (07) 850 8329  
e-mail : [civil@nziht.co.nz](mailto:civil@nziht.co.nz)

## ENTRY ASSESSMENT FORM

### CERTIFICATE IN ENGINEERING TECHNOLOGY

On the basis of the information you supply, we will assess your application to join the Certificate in Engineering Technology Programme. An Enrolment pack, including recommendations on which courses to enroll for, is supplied after this assessment is completed. **Please supply with this form a copy of all result transcripts/ CV.**

Mail to:

**Programme Manager  
NZ Institute of Highway Technology  
PO Box 27050  
Garnett Avenue  
Hamilton 3257**

#### Personal Details

Name:						
Address:						
Phone:		(Home)		(Work)		(Mobile)
Email:		(Home)		(Work)		
Date of Birth:			Citizenship (Please tick appropriate box)	New Zealand Citizen <input type="checkbox"/> Permanent Resident <input type="checkbox"/> Other (Please Specify) <input type="checkbox"/> .....		

#### Academic History

*Provide all the information that will help us to determine your eligibility to enroll in the programme and for possible cross credits or exemptions from components of the programme. An updated CV is very useful.*

#### (a) Secondary Level

Please tick the levels you have achieved and attach a copy of the results transcripts.

		School Subjects/Courses completed for which results transcripts have not yet been received.	
			Course
	NCEA Level 1 (5 <sup>th</sup> Form Certificate)		
	NCEA Level 2 (6 <sup>th</sup> Form Certificate)		
	NCEA Level 3 (Bursary)		
If you have completed any of the above, but have not received the results yet, list the courses you have studied in the column on the right.			

#### (b) Tertiary Level

Please provide information of any tertiary studies completed to date:

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If you already know which courses you wish to enroll for in 2012, indicate them on the *Course Selection Form* overleaf otherwise leave the form blank.

**Certificate in Engineering Technology**  
**Shaded areas indicate a course is not offered at that venue**

Venue abbreviations: HMN = Hamilton  
 PMN = Palmerston North

CHC = Christchurch  
 AKL = Auckland

Course Code	Course Name	Level	Credits	Pre-requisites & Co-Requisites	2012								
					Semester 1				Semester 2				
					HMN	CHC	AKL	PMN	HMN	CHC	AKL	PMN	
Elective Foundation Course													
CET2.001	Core Engineering Skills	2	15										
CET2.002	Core Skills (Civil & Highway)	2	15										
CET3.001	Introduction to CAD	3	15										
CET3.002	Mathematics (Introduction)	3	15										
Strand A – Core Engineering Courses													
CET4.113	Technical Literacy	4	15										
CET4.111	Engineering Fundamentals	4	15	CET3.002 - Co									
CET4.112	Mathematics 1	4	15	CET3.002 - Pre									
CET4.211	Materials (Civil)	4	15										
Strand B – Highway Engineering Courses													
CET5.204	Highway Engineering 1	5	15	CET2.002 – Co <sup>3</sup>									
CET4.212	Land Surveying 1	4	15	CET2.002 – Co <sup>3</sup>									
CET5.207	Geotechnical Engineering 1	5	15	CET2.002 – Co <sup>3</sup>									
CET6.101	Engineering Management (Civil)	6	15										
CET6.202	Highway Engineering 2	6	15	CET5.204 - Pre									
Strand C – Civil Engineering Courses													
CET4.211	Materials (Civil)	4	15										
CET4.212	Land Surveying 1	4	15	CET2.002- Co <sup>3</sup>									
CET5.207	Geotechnical Engineering 1	5	15	CET2.002 – Co <sup>3</sup>									
CET4.211	Civil Construction Supervision	4	15										
CET5.201	Structures 1	5	15	CET4.111 - Pre									
CET5.202	Civil and Structural Drawing	5	15	CET4.113 - Pre									
CET5.203	Hydraulics (Civil)	5	15	CET4.112 - Pre									
CET6.101	Engineering Management (Civil)	6	15										
Strand D – Water Utilities Engineering Courses													
CET4.213	Core Engineering Skills (Water)	4	15										
CET4.214	Water & Wastewater (Intro)	4	15										
CET6.205	Water & Wastewater Systems	6	15	CET4.213 – Pre CET4.214 - Pre									
CET6.206	Water & Waste Management	6	15	CET4.214 - Pre									
CET6.101	Engineering Management (Civil)	6	15										

**All courses scheduled will be offered subject to sufficient demand**