

## 1905-1915

In 1905 provincial rivalry spurred the Engineering School Director, R.J.Scott, to successfully petition for money to fund a specialist Civil engineering Department.

The School had two teaching functions at this time:

- (i) educating qualified engineers; and
- (ii) imparting technical instruction to mechanics and apprentices via evening classes

This second function being both politically and economically the mainstay of the schools existence in its early years. Not until just prior to WWII did training of professional engineers become its primary function.

Research within the School was minimal and limited to local product analysis and instrument standardisation but the relationship with industry was strong and the Engineering School tended to look to industry as its centre (rather than to Canterbury College).

The original BE(Civil) degree essentially followed the BE(Mechanical) syllabus, replacing steam engineering and workshop practice lectures with tuition in physical geology, surveying and construction. In 1906 the BE(Civil) gained international recognition when it was accepted as meeting the requirements of the prestigious Institution of Civil Engineers in the UK.

## 1920's

By 1920 Civil Engineering was gaining primacy in the Engineering School, at least in student number terms.



In 1922 Scott retired as school Director being considered inappropriate for him to retain the position as engineering knowledge was becoming very specialised. Instead, three chairs, one each in civil, mechanical and electrical, were created. The following year R.A. Campbell was promoted to Professor and becomes the first to hold the Chair in Civil Engineering.

After Scott's retirement the Engineering School entered a period of stagnation. Whether this was because the school had been "inextricably riveted to his life and character" or to the prevailing economic depression (or a combination of both) is for historians to debate. What is apparent is the rising concern about work quality in the Engineering School. By the mid 1920's overseas examiners were expressing this concern. 1925: "work is not quite up to high standards of three years ago". 1926: "the theoretical work leaves something to be desired"

Campbell successfully contested the College's 'no outside work' policy in 1923. He argued that such work would keep him in touch with present practices and prices and would not interfere with his teaching.

Engineers Registration Act 1924 passed. Resulting in higher salaries for engineers. The School had difficulty competing and therefore found it hard to attract staff.

## 1930's

Campbell retired in 1929 and J.E.L. Cull was appointed to the Chair. Cull modernised teaching methods and attempted to keep abreast of new developments in theory and practice. Examiner criticisms improved and even commended the thoroughness of teaching in Hydraulics. While the other departments stagnated the civil department was buoyed by the large amount of construction work in progress (the 1935 Labour

### Bachelor of Civil Engineering 1906 (1yr prelim + 4yrs professional)

#### 1st Year

Mathematics 2	Technical Chemistry
Descriptive geometry	Applied Mechanics
Mechanics of Machinery	Physical geology
Freehand Mech.Drawing	Steam Engine (Opt.)

#### 2nd Year

Mathematics 3	Hydraulics
Electricity & Magnetism	Practical Surveying
Mechanical Drawing	Strength of Materials

#### 3rd Year

Electrical Engineering	Building Constr.
Strength of Materials	
Mechanical Drawing & Design	

#### 4th Year

Advanced Surveying	Plotting
Mechanical Drawing & Design	
Principles of Civil Engineering	

\* All exams set and marked in UK

Practical work requirement of 9 months in approved workshops and 9 months under a civil engineer in practice

### Bachelor of Civil Engineering 1923 (1 yr prelim + 3 yrs professional)

#### 1st Professional Year

Mathematics 2	Descriptive geometry
The Steam Engine	Applied Mechanics
Strength of Materials	Physical geology
Freehand Mechanical Drawing	

#### 2nd Professional Year

Mathematics 3	Surveying
Applied Electricity	Mechanical Drawing
Strength of Materials	
Theory of Workshop Practice	

#### 3rd Professional Year

Mech.Drawing & Design	
Hydraulics & Pneumatics	
Adv. Surveying	Building Construction
Borough Engineering	Railway Engineering
Marine Engineering	Contracts and Specifications

\* All exams set and marked in UK

Practical work requirement of 9 months in approved workshops and 9 months under a civil engineer in practice

Government injected large amounts of capital into public works). Staffing problems were further exacerbated by high salaries and increasing demand for practising civil engineers.

In 1939 examinations were marked in New Zealand for the first time.

## 1940's

In 1940 the Engineering School gained autonomy, both setting and marking its own examinations.

Cull retired from the Chair in 1941. Lack of suitable candidates led G.G. Calvert into the position of acting Head. He was later appointed to the Chair.

In 1943 the Professorial Board instituted an inquiry into research activities and it became apparent that the Civil Engineering Department had been quite active. Calvert provided the Board with an impressive list unmatched by other departments. It covered models of wind pressure distribution, hydraulic structures and rivers, erosion studies, and a shaking table being constructed for the study of earthquake design. The outcome of the inquiry was the establishment of the University of New Zealand Research Grants, enabling more postgraduate and academic research.

Remarkable technological advances during WWII had fostered a new respect for science and scientific advancement. As a result there was a post-war influx of students into science and engineering. Severe overcrowding and inadequate space to grow on the city campus led to search for another site for the University. In 1950 approval was granted for a site at Ilam.

## 1950's

In 1951 Calvert retired and H.J. Hopkins took the Chair. At this time the department was perceived as rudderless and Hopkins took control and breathed new life into it. In particular, Hopkins knew the value of good staff and was very particular when choosing new staff members

Student research was encouraged and developed in the department. In 1951 the first PhD in Civil Engineering was conferred and in 1953 Master and Doctor of Philosophy qualifications were listed in the Prospectus for the first time. In 1954 ENSOC successfully appealed to industry for postgraduate scholarships.

In 1953 Hopkins invites Public Works engineers to a seminar on concrete and soils, sparking the beginning of an ongoing relationship between civil engineering industry and the Department.

In 1955 the department completed a review of the civil degree course and implemented changes that reflected the specialist nature of civil engineering. The result was less mechanical engineering content in the BE (Civil). The extra honours year was dropped and a degree with honours was given if a student received good grades in the undergraduate course.

## 1960's

The Hughes Parry Committee inquiry brought about the beginning of academic hierarchy reform in 1960. Hopkins welcomed this reform as it meant greater flexibility when attempting to engage new staff members.

### Bachelor of Civil Engineering 1948 (1 yr prelim + 3 yrs professional)

#### 1st Professional Year

Mathematics 2	Surveying 1
Descriptive Geometry	Applied Mechanics
Fluid Mechanics*	Strength of Materials*
Heat Engines*	Mechanical Drawing*
Applied Electricity	
Chemistry of Engineering Materials	

#### 2nd Professional Year

Mathematics 3	Surveying 2
Applied Electricity	Strength of Materials
Theory of Structures 1	
Eng. Drawing & Design 1	

#### 3rd Professional Year

Eng. Drawing & Design 2	
Hydraulics & Pneumatics	
Principles of Civil Eng.	Physical Geology
Surveying 3	OR Theory of Structures 2

\* Lectured but not examined

Extra honours year available consisting of Adv. Geology, Adv.Math and a thesis.

PRACTICAL WORK REQUIREMENT CONSISTED OF A WORKSHOP TRAINING COURSE, 6 MONTHS IN APPROVED WORKSHOPS, AND 3 MONTHS IN APPROVED PRACTICE PLUS A FIRST AID CERTIFICATE.

### Bachelor of Civil Engineering 1956 (1 yr prelim + 3 yrs professional)

#### 1st Professional Year

Mathematics 2	Engineering Materials
Applied Mechanics	Drawing & Design 1
Electrical Engineering 1	
Thermo & Heat Engines 1	

#### 2nd Professional Year

Mathematics 3	Surveying
Fluid Mechanics 1	Strength of Materials
Structures 1	Drawing & Design 2
Engineering Geology	

#### 3rd Professional Year

Drawing & Design 3	Geology
Structures 2	Fluid Mechanics 2
Strength of Materials 2	Soil Mechanics
Mathematics 4 (Opt.)*	
Principles of Civil Engineering	

\* Compulsory to qualify for honours. No extra year now required for honours. Instead need good grades and Math 4.

PRACTICAL WORK REQUIREMENTS CONSISTED OF A WORKSHOP TRAINING COURSE, 180 DAYS APPROVED PRACTICAL PLUS 2 WORK REPORTS AND A FIRST AID CERTIFICATE.

In 1961 the Engineering School had moved fully to the Ilam site. The new school was, in fact, too small for existing student numbers and construction on further extensions building began a year later.

Further reform of the BE(Civil) degree course occurred in 1962. Specialist civil papers were included at first pro level and the practical work requirement was reduced to 60 days civil labouring, 60 days approved practice and a workshop training course. Third pro was made elective in the third term. By 1969 the whole third pro syllabus was elective.

In 1965 the Engineering School was demoted from special school status to faculty status. This meant it had to compete with other faculties for funding and funding applications were subject to greater scrutiny.



The mid to late 1960's saw the Civil Engineering department gaining international reputation for research. This was due largely to Professors Park and Paulay's timely research into reinforced concrete and earthquake resistant design. At this time research in the department was very buoyant, aided by the massive growth in the industry, increased availability of money for research and the advent

of computers in the University (the University bought its first computer in 1962).

## 1970's

The third pro elective options were extended to include Engineering Economics in 1971 and History of Civil Engineering in 1975.

In 1977 A.D. Brownlie was appointed Vice Chancellor. He instituted new requirements for consultation in departments. At about the same time Hopkins retired as Chair and was replaced by R. Park. Park's administration skills coupled with the new Brownlie requirements created an "open yet more cohesive department despite the wide range of civil engineering activities." Park formalized the department with a wide range of executive and standing committees.

## 1980's

In 1983 all first, second and third pro. courses were converted to single paper courses to provide greater simplicity and flexibility. In 1984, a departmental review of degree content resulted in substantial course changes particularly to contact hours in many courses. Municipal Engineering was introduced at the second pro level and third pro students were given the option of substituting one engineering paper with six points from outside the Department.

The first IPENZ moderation occurred in 1986 to assess the standard and content of courses in relation to professional requirements in NZ, and then to assist desirable change or improvements. The BE(Civil) was assessed as meeting accreditation standards. Recommendations for improvement included: lowering the average age of staff, making reference to communication goals in course objectives, teaching maths within the department and teaching an appreciation of environmental issues.

In 1989 the practical work requirement was modified to 120 days of which at least 40 days minimum was to be manual work and 40 days minimum was to be in approved practice.

## Bachelor of Civil Engineering 1969

### 1st Professional Year

Mathematics 2	Engineering Materials
Drawing & Design 1	Applied Mechanics
Electrical Engineering 1	
Thermo & Heat Engines	

### 2nd Professional Year

Mathematics 3	Structural Analysis 2
Fluid Mechanics 2	Drawing & Design 2
Surveying	
Soil Mechanics & Applied Geology	

### 3rd Professional Year

8 exams of the following:

Fluid Mechanics 3	Structural Analysis
Theoretical Mechanics	Engineering Geology
Structural Design	
Public Health Eng.	Highway & Traffic Eng.
Surveying and Photogrammetry	
Soil mechanics & Foundation Engineering	
Building & Construction Engineering	

PRACTICAL WORK REQUIREMENTS CONSISTED OF A WORKSHOP TRAINING COURSE, 180 DAYS APPROVED PRACTICAL PLUS 2 WORK REPORTS AND A FIRST AID CERTIFICATE.

## Bachelor of Civil Engineering 1985

### 1st Professional Year

Mathematics 2	Engineering Design 1
Fluid Mechanics 1	Geomechanics 1
Electrical Engineering 1	Structural Mechanics 1
Engineering Geology 1	

### 2nd Professional Year

Mathematics 3	Structural Mechanics 2
Fluid Mechanics 2	Engineering Design 2
Geomechanics	Engineering Materials
Civil Eng. Practices	Municipal Engineering

### 3rd Professional Year

8 exams of the following:

Engineering Geology	History of Civil Eng.
Hydraulic Engineering	Traffic Planning
Hydrology	Highway Engineering
Structural Theory	Geomechanics 3
Structural Design	Analytical Mechanics
Structural Analysis	Civil Eng. Systems
Construction Management	
Computational Mechanics	
Public Health Engineering	
Surveying and Photogrammetry	

PRACTICAL WORK REQUIREMENTS CONSISTED OF A WORKSHOP TRAINING COURSE, 180 DAYS APPROVED PRACTICAL PLUS 2 WORK REPORTS AND A FIRST AID CERTIFICATE.

## 1990's

In 1990 the Department began teaching mathematics courses that had previously been taught by the Mathematics Department. In 1991 third pro. were given the option of substituting up to 2 engineering papers with 12 points (6 points for each paper substituted) from outside the Department.

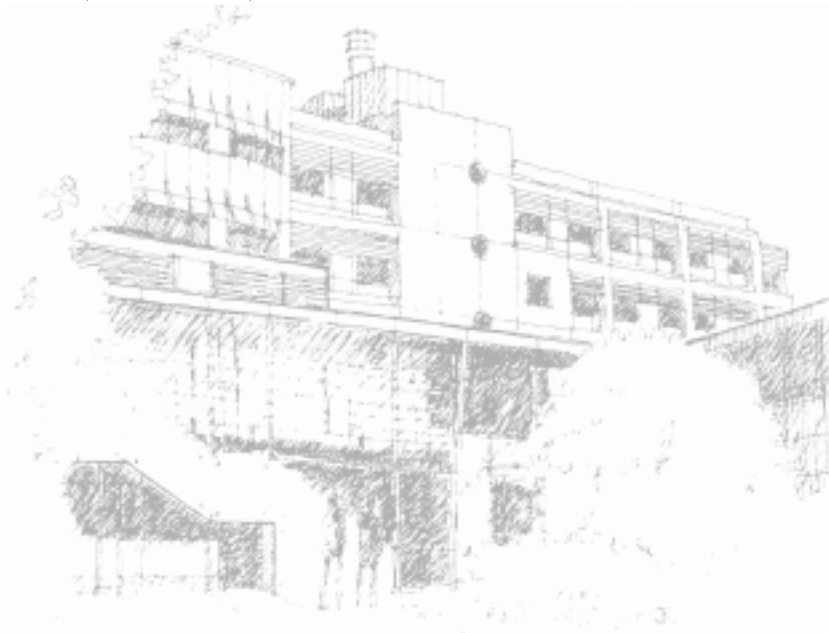
In 1991 the first externally funded lectureship in civil engineering was provided by the Heavy Engineering Research Association. This was a fixed 5 year position and was taken up by Mr. Peter Phelan. The Cement and Concrete Association followed with a three-year lectureship in Concrete Engineering in 1993, and in 1994 the NZ Fire Service funded a lectureship in Fire Engineering.

The second IPENZ moderation took place in 1991. The BE(Civil) was assessed as meeting the requirements for accreditation. Recommendations for improvement included adding fire and abolishing surveying from third pro., offering a BE(Environmental), incorporating quality assurance issues and coordinating research programs with Auckland. Many of these recommendations were implemented. Timber and Fire was offered in 1991. Surveying and Photogrammetry was abolished from third pro and replaced with Geographic Information Systems in 1992. In 1993 Environmental Analysis was added to first pro (requiring a 50% reduction of contact hours in Engineering Design 1(Civil)). 1994 saw BE(Environmental) offered for the first time as well as an ME(Fire). In 1995 the BE degree was upgraded to an honours degree, i.e. BE(Hons).

In 1992 Park retired as Head Of Department and the first non-professorial Head, Dr. N. Cooke, was elected to the position for a 5 year term.

With 1995 came approval for a new five storey Civil/Mechanical building. The building houses staff and postgraduate studies, a dedicated computer suite, environmental engineering laboratory, geomechanics laboratory, pavement laboratory and model structures laboratory. It was completed and occupied in 1997. The existing laboratory wing was extensively refurbished in 1998.

The third IPENZ moderation occurred in 1996. Once again the BE(Civil) met accreditation requirements but the BE(Environmental) was deemed "not sufficiently different" to the BE(Civil) to be accredited differently. In 1998 the BE(Environmental) was discontinued.



## Bachelor of Civil Engineering 1998

### 1st Professional Year

Mathematics 2	Engineering Design 1
Engineering Statistics	Eng. Computation
Engineering Geology 1	Fluid Mechanics
Structural Mechanics 1	Geomechanics
Surveying	Environmental Analysis

### 2nd Professional Year

Mathematics 3	Structural Mechanics 2
Fluid Mechanics 2	Engineering Design 2
CE Management	Engineering Materials
Geomechanics 2	Transportation Eng.
Environmental Quality Engineering	

### 3rd Professional Year

8 exams of the following:

Analytical Mechanics	CE Systems
Construction Mgmt	Engineering Geology
Geomechanics 3	History of CE
Hydraulic Engineering	Hydrology
Pavement Engineering	Reinforced Concrete
Structural Theory	Traffic Planning
Timber & Fire Eng.	Special Topics
Structural Steel	Structural Concepts
GIS	Solid Waste Mngmnt.
Public Health Eng.	Project
Industrial Pollution Control	
Computational Mechanics	

PRACTICAL WORK REQUIREMENT  
CONSISTED OF A WORKSHOP TRAINING  
COURSE, 120 DAYS APPROVED WORK (AT  
LEAST 40 DAYS MANUAL AND 40 DAYS  
APPROVED PRACTICE), PLUS 2 WORK  
REPORTS AND A FIRST AID CERTIFICATE.