College of Engineering

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Postgraduate Transportation Programme

Why this programme?

There is a shortage of people with the appropriate Transportation Planning and Engineering skills in New Zealand and overseas. The demand for such skills is expected to increase, as the demand for transport services and concern for the social and environmental effects of transport increase.

The postgraduate transportation degree programme has been established by the Civil and Natural Resources Engineering Department with financial and other support from the government, the transport industry and the engineering profession in New Zealand. The programme is monitored by industry representatives to ensure the programme meets the needs of the transport industry, and enhances employment opportunities for graduates.

The programme is designed to cater for a wide variety of students, including overseas graduates, non-engineers, working practitioners and "distance" (non-Christchurch based) students.

Qualification Options

Students can study for the following qualifications at Canterbury:

- Certificate of Proficiency (COP): A one-off paper ideal for industry Professional Development or to "try out" the programme.
- Postgraduate Certificate in Transportation Engineering (PGCertEng(Trpt)): typically five papers (0.5 yr full-time, 2-4 yrs part-time)
- Master of Engineering Studies (MEngSt) : typically ten papers (1 yr full-time, 3-5 yrs part-time)
- A Master of Engineering in Transportation (MET) : typically up to six papers and a research project/thesis (1-2 yrs full-time, 3-4 yrs part-time)
- A Doctor of Philosophy (PhD) research thesis with no coursework (2-4 yrs full-time, 4-7 yrs part-time)

Entry Requirements

The preferred entry requirement is a Bachelor's degree in Engineering; however, candidates with other relevant degrees (e.g. geography, psychology, planning, economics, mathematics) and/or suitable work experience (including experienced NZCE practitioners) will also be considered.

Prospective candidates should first complete and submit the online programme application form, describing their qualifications, employment history, intended study programme, research interests and goals. Once your application has been reviewed by the Department, you will be informed regarding your eligibility. Following this, you can then formally apply to enrol at Canterbury. For details see www.canterbury.ac.nz/enrol/.

If your degree is not from a New Zealand University, you will need to apply for an *ad eundem* admission to the university. Consult with the International Office for more details. www.canterbury.ac.nz/intstud/admiss/

Block Mode Teaching

Postgraduate transportation courses generally are taught in 'block mode' to enable working practitioners to take part. A course taught in 'block mode' typically involves:

- attending two 3-day teaching blocks about six weeks apart
- background reading material and completing assignments
- sitting an examination at the end of the course (can be in your home town)

Support is also provided for off-campus students via our library distance service and online teaching content system.

Research

Part of the MET and PhD requirements include a research project in a relevant area of transportation, under the supervision of an academic staff member. Possible topics include all areas covered in the courses, and other areas of personal or industry interest.

Potential candidates should discuss first with transport programme staff available supervision, possible research topics and opportunities for funding assistance.

Auckland Collaboration

This programme is offered in collaboration with the University of Auckland. You can credit one or more Transportation Engineering courses from Auckland, provided at least half of your courses are from Canterbury.

Courses Available

Canterbury offers a variety of courses, in the following areas:

- transportation planning
- pavement engineering
- traffic engineering

Twelve transportation courses are offered on a rolling basis every 2-3 years, including a prerequisite "Fundamentals" course for non-engineers and a compulsory "Planning and Managing Transport" course.

You may also be permitted to credit other relevant courses taught in the Department (e.g. risk assessment, construction management) as well as elsewhere on campus (e.g. Geography, Geology, Management, Psychology, Mathematics and Statistics).

Academic Staff

- **Alan Nicholson**
  BE(Hons), ME, MSc(Birm.), PhD, FIPENZ
- **Mofreh Saleh**
  BSc(Cairo), MSc(Cairo), PhD (Arizona)
- **Andre Dantas**
  BE (UFMG), MSc(Brasilia), PhD(Nagoya)
- **Glen Koorey**
  BE(Hons), BSc, ME, MIPENZ
- **Kenneth Kuhn (from 2009)**
  BA, MS, PhD(Berkeley)

We also have visiting professors from eminent universities overseas and senior engineers from local industry, assisting with teaching and research supervision.

Funding Assistance

A number of industry and university scholarships are available to assist students. Many students are also sponsored by their employers to undertake study.

Further information

For an application form or additional information, contact:

Postgraduate Administrator
Civil and Natural Resources Engineering
University of Canterbury
Private Bag 4800
Christchurch, New Zealand, 8140
Fax: +64 3 364-2758
Phone: +64 3 364-2380

Email: met@canterbury.ac.nz
Website: www.met.canterbury.ac.nz

Course Offerings

In addition to the courses listed below , additional "Special Topic" courses may be available to students as a one-off course or for customised independent minor research. Please discuss this option with transport programme staff.

Core Courses

ENTR401: Fundamentals Of Transport Engineering

Transportation planning; road link theory and design; Intersection analysis; traffic studies; accident reduction; sustainable transport. *{PGCertEng(Trpt) students}*

ENTR611: Planning And Managing Transport

Road/transport administration in NZ; legislation; communication skills and consultation; transport assessment and economics; demand management; contracts and construction. {*Mandatory course for most postgraduate transport students.*}

Other Courses

ENTR 602: Accident Analysis, Reduction and Prevention:
Impact on society; Data interpretation; Hazardous location identification; Problem diagnosis; Treatment selection; Economic evaluation.

ENTR 603: Advanced Pavement Design

Stresses, strains and deflections in flexible and rigid pavements; pavement materials; mechanistic and empirical design methods; pavement performance and evaluation.

ENTR 604: Pavement Management Systems

Pavement management concepts; data requirements; functional and structural performance; intervention criteria; deterioration models; rehabilitation and maintenance strategies and priorities.

ENTR612: Traffic Management Policies:
Transport economics; Demand and supply management; congestion pricing; Transport policy objectives and instruments; Traffic management modelling.

ENTR613: Highway Geometric Design

Human and vehicle factors; sight distance; horizontal and vertical alignment; cross-section design; design plans; land use access; intersection design; Major design project.

ENTR614: Sustainable Transport Planning:
Pedestrian planning and design; Cycle planning and design; Public transport operations and network design; Travel behavior change and travel plans.

ENTR615: Transport Network Modelling:
Principles of modelling; Road network modelling; Macro- and micro-simulation; Intersection modelling; Transport network reliability.

ENTR616: Advanced Transport Planning and Modelling
Urban transport planning models; geographic information systems (TransCAD); travel demand modelling and prediction; project appraisal; advanced traffic/transport modelling.

ENTR617: Traffic Engineering and Design

Traffic flow and queuing theory; survey design; local area traffic management; traffic signals; intersection safety; parking planning and design; traffic detection and Intelligent Transport Systems.

ENTR618: Transport and Freight Logistics

Urban goods movement; transport/freight logistics; supply chain management; planning/design for other transport modes (rail, air, sea); major research project.