

MET News

Department of Civil and Natural Resources Engineering

Volume 5 December 08

Welcome

Welcome to our fifth annual issue of "MET News", the newsletter for the Master of Engineering in Transportation (MET) programme at the University of Canterbury. It's designed to report on our activities to both our industry sponsors and to potential students. We hope that you will find it interesting.

It's been another busy year, particularly with the introduction of a number of new courses in the programme. But the new offerings have generally been received very well by the students.

It's also pleasing to see a continued increase in student numbers and from an increasingly broad range of backgrounds. If we are to boost the supply of specialised transportation practitioners to the industry, they certainly won't all come from the traditional base of civil engineering.

If you're interested in enrolling in our programme, or supporting it in any way, please get in touch.

Professor Alan Nicholson
Programme Director

New transport programme kicks off

Changing demands within the transport sector has seen the UC postgraduate transport programme revised and a new series of courses introduced this year.

Part of the restructuring involves a new bridging course called Fundamentals of Transport (ENTR401). It introduces the basic concepts and principles of traffic engineering and transport planning for those who not have been taught this material at undergraduate level.

Glen Koorey, Senior Lecturer in transportation engineering, says that the aim was to ensure that the postgraduate transport programme met a wide range of needs. "We have found that a lot of people, like planners, psychologists and geographers, want to enrol in our programme but with no prior transport engineering education."

The Fundamentals course has been attached to the existing "Fundamentals of Traffic Engineering", a week-long industry course that alternates annually between Canterbury and the University of Auckland.

"For 2008 we had six students joining the 23 industry attendees. The timing of it allowed us to assess new students about their suitability for the full postgrad programme, prior to our other courses starting in semester one."

This year, new courses were also offered expanding on topics such as NZ transport administration, sustainable transport and traffic modelling. Next year new courses in highway geometric design, urban traffic engineering, and freight logistics will also be introduced.

Maintaining links with the transport industry is vital, said Glen. "By structuring our programme to meet their needs and the needs of their staff we do that. Our programme also involves good links with our colleagues at Auckland University, who are also funded by NZTA to provide postgraduate transportation study, and this collaboration is very evident in the Fundamentals course."

From 2008 a Postgraduate Certificate in Transportation Engineering (typically requiring five papers) has been introduced, to complement the Masters qualifications offered. Students can also restructure their qualifications as they study. For example, if a person doesn't complete enough papers for the Masters, they can still graduate with a Postgraduate Certificate. Says Glen, "it offers flexibility to suit a range of students and situations."



Alan Nicholson and Glen Koorey celebrate with MET graduate Richard Landon-Lane at the Dec 2008 graduation ceremony.



(Below, left to right) Prof. Alan Nicholson, Assoc. Prof. Roger Dunn (University of Auckland), Prof. Eric Hildebrand (University of New Brunswick) and Glen Koorey all contributed to the new Fundamentals of Transport course in 2008.

Juggling work, study and sport

Many of our students have to juggle their studies with full-time work in the transport industry. Not many also throw into the mix a career in international athletics as well, but that's what MET student Rebecca Wardell has been doing.

Rebecca didn't come into transport by a traditional path; her first degree was a BA(Hons) in Political Science and German at Canterbury, back in 2000. She started at engineering consultants GHD Ltd in administration in 2004, when looking for a part-time job to fit around her athletics training. But over the years that role has changed.

"Whilst working in admin I became interested in what the transport team were doing in the office and have gradually been able to become more involved in transport projects, learning heaps on the job."

Although interested in transport, Rebecca realised that, in order to pursue a career in it, she would need some qualifications in the area.

"I decided to go back to University to gain formal training. The best option for me was to enrol in the MET programme."

Meanwhile Rebecca's athletics career continued to blossom. A New Zealand track representative since 2001, Rebecca has attended the 2003 World Championships, the 2006 Commonwealth Games and most recently the 2008 Olympic Games where she competed in the gruelling heptathlon.

"Beijing was incredible; I have wanted to compete at the Olympics ever since I was little. It's definitely the highlight of my career to date, as there is no bigger sporting event than the Olympics."

Rebecca has been enrolled in the MET programme since 2006, so far completing half of the required coursework, all with very good grades. Not surprisingly, juggling MET studies has been challenging, considering she works 20 hours a week and trains for athletics 6 days a week too.

"I had 2008 off my study to focus properly on the Olympics and spent 2 months in Europe in order to qualify for the Olympics. I am lucky that GHD are really flexible with my work commitments, and the University have been really flexible with my study, enabling me to travel to compete."

To this end, Rebecca has found the MET "block course" system very useful.

"The programme suits me really well as I can study in my own time and attend the block courses. This is much better than having regular class hours each week. It means I can still work and do my training as well as fitting in study."

Rebecca also appreciates the skills and knowledge she has acquired in the courses so far.

"I have gained an understanding of the fundamentals of transport engineering and have been encouraged to think about future transport scenarios. It has really helped me at work, where I can apply what I have learned."



Looking to the future, Rebecca's immediate plans are focused on her athletics.

"I am currently training towards the World Championships in Berlin, 2009, and Commonwealth Games in India, 2010. After this I may consider retirement from athletics."

Long-term, Rebecca plans to complete her MET as soon as possible and continue to work at GHD. She strongly encourages others to consider doing postgraduate transport studies while working (although maybe not with an athletics career as well!)

"The block courses are great and the on-line system enables you to communicate with other students and lecturers in between the block courses. It's a great way to gain more skills whilst working so you don't have to go back to being a poor student."



Above: Rebecca at work at GHD Ltd and left competing at the Beijing Olympics

Happenings and Achievements

The University has been successful in obtaining a three-year continuation of funding for the postgraduate transportation programme from the NZ Transport Agency (formerly Land Transport NZ) at \$230,000 per annum.



The continued funding allowed the University to reappoint Glen Koorey for another four-year term and to appoint an additional transportation lecturer. Following a comprehensive recruitment process, Dr Kenneth Kuhn from San Francisco, USA, will join the Department in March 2009.

Congratulations also to our most recent programme graduates. Five students completed their MET degrees in the past year, and another

four completed the new Postgraduate Certificate in Transportation Engineering.

It's been a quiet year for overseas visitors, with only Prof. Eric Hildebrand (University of New Brunswick, Canada; road safety) assisting with the programme.

Congratulations to Alan Nicholson, on his recent promotion to full Professor. In July 2008 Alan presented a paper at the 4th International Symposium on Travel Demand Management, in Vienna-Semmering, Austria.

André Dantas began his study leave in July 2008; he will be in Brisbane, Australia for 10 months working with local transport practitioners and academics. While there, André is involved in the Airport Metropolis project, modelling how Brisbane International Airport's planned development will affect travel behaviour and

transport system performance in SE Queensland over the next 25 years. André has also joined MWH Australia as a Specialist Advisor in Transport Planning and Modelling, where he is involved in various project peer reviews and providing staff training and mentoring.

Working with Drs. Sonia Giovinazzi and Erica Seville (Resilient Organisations Programme), André secured \$75k of research funding from NZ Transport Agency to continue research about the readiness of Road Controlling Authorities during emergency events. Also, André received one of the two College of Engineering Emerging Research awards for 2008.

Mofreh returned from study leave in June 2008. After spending six months at the University of Central Florida last year, he was hosted this year by Opus international Consultants in Christchurch. There he was able to help them in

some investigative matters, such as the frost heave problem that affects many of the South Island state highway networks, and the design of the Christchurch Southern Motorway.

In July, Mofreh Saleh attended the 6th International Conference on Road and Airfield Pavement Technology, in Sapporo, Japan, where he presented two papers and chaired a session.



Mofreh Saleh (second from left) with fellow conference delegates

In September 2008 Glen attended ProWalk/ProBike 2008, the 15th International Symposium on Walking and Bicycling in Seattle, USA, where he presented a paper. While in the region, Glen also undertook a study tour of sustainable transport practices in Oregon, Washington and British Columbia. Immediately on his return he gave another presentation at the TRAFINZ conference in Christchurch.

Glen also attended the NZ Transportation Conference in New Plymouth in November 2008. At the same conference, recent MET graduates Megan Fowler and Bill Rice were honoured for their conference contributions, Megan winning the Young Author award and Bill being Highly Commended in the Best Paper category. 2006 MET graduate Mike Smith was also judged the winner of the 3M Traffic Safety Innovation Award for his work on pedestrian crossing warning light trials.

Academic staff also contributed to a variety of industry training courses during the past year, including "Fundamentals of Traffic Engineering" (for UC Opportunity), "Pedestrian Planning and Design" (for NZTA), "Integrated Transportation Assessment, Surveys and Database" (for NZTDB), and "Geometric Design" (for NZIHT).



Walking the talk... Glen Koorey visits international sustainable transport expert Todd Litman (left) in his hometown of Victoria, Canada.

Research - Primary school pupils' travel choices

Travelling to school has changed over the years for school children and new MET research shows for the first time primary school travel patterns.

Bill Rice, a senior transport engineer at Opus, surveyed more than 2300 children from 22 Christchurch schools on how they got to school and the reasons for their choice of transport. Bill completed the research this year as part of his MET supervised by Dr Andre Dantas.

The travel behaviour of New Zealand primary school pupils has changed significantly in recent decades, according to Bill. "The proportion of children being driven to school has increased from 34% in 1989 to approximately 60% of school pupils in 2003. This trend is similar to trends that have been observed in countries such as Australia, the UK, Canada, and the US."

The study aimed to identify what the transport choices were and what the influencing factors were. "These were so interrelated that it became very difficult. We surveyed the distance from school, the availability of a car, time constraints and the environment. The factors that came through strongly were safety - road and personal safety," Bill said.

The study showed that there has been a reduction in the number of children who travel independently (without an adult). This is probably due to an increase in car travel, but also because of a perceived issue of safety.

"These changes in school travel patterns have significant impacts for local authorities. Schools have become significant traffic generators and typically those schools are located on local roads. It is therefore likely that the task of dealing with the bulk of the traffic generated by primary schools will be borne by local authorities."



The study came about after Bill had been looking at the building regulations around a new school. "I thought there was a huge gap in the understanding of how children got to and from school, and why. Transport planners who are designing around schools have more data to use now".

A couple of things from the study surprised Bill. He expected that as the decile of school increased, the more they would rely on cars to drop children off. "But this wasn't the case. In fact it was very low in decile 1 and decile 10 and variable in the middle," he said.

He was also surprised at the impact crossing major roads had on transport choice. "More children travelled by car if they had to cross a busy road and this reflected parents' and children's behaviour. Another finding was the variable impact that walking school buses had, but a dedicated school travel plan or travel co-ordinator certainly had an impact.

"The decisions made regarding children's school travel are very complex and involve juggling a number of often conflicting demands. I think it has been a very worthwhile experience."

Local Practitioner Support

We are fortunate to have the support of many experienced local industry practitioners who contribute sessions to our courses. This year was no different, with over twenty visitors assisting with lectures, labs, and even field exercises. As well as helping to ease the teaching workload of the programme, their presence also provides students with some cutting-edge expertise in a range of specialist topics.

We are grateful for the support of the following organisations in allowing their employees to assist with our programme this year:

Ministry of Transport
Christchurch City Council
Beca Infrastructure
Douglass Consulting Ltd
SKM Ltd
BasePlus Ltd

Land Transport NZ (now NZTA)
Environment Canterbury
Fulton Hogan
Abley Transportation Engineers Ltd
ViaStrada Ltd
Royal NZ Foundation of the Blind

Publications

Recent Staff publications

Note: These are just a selection of recent publications; for a more detailed list, refer to the MET website.

- Giovinazzi, S. Ferreira, F. Dantas, A. Seville, E. (2008) Enhancing the reconstruction process for highway networks: opportunities and challenges for Decision Support Systems. Proceedings of the 4th International i-Rec Conference 2008. Building resilience: achieving effective post-disaster reconstruction; Christchurch, Apr-May 2008.
- Koorey G., McMillan S., Nicholson A. (2008). The effectiveness of incident management on network reliability. Land Transport NZ Research Report No. 346, 60 pp.
- Koorey G. (2008) "It's Not About the Bike (or Path): New Approaches to Providing for Walking and Cycling", ProWalk/ProBike 2008, 15th International Symposium on Walking and Bicycling, Seattle, USA, Sep 2008.
- Krumdieck S., Dantas A. (2008) The Visioning Project: Part of the Transition Town Engineering Process; 3rd International Conference on Sustainability Engineering and Science, Auckland, Dec 2008.
- Nicholson, A.J. (2008) Travel Demand Management in NZ: A Cautionary Tale. Proceedings of 4th International Symposium on Travel Demand Management, Vienna-Semmering, Austria, July 2008: 244-253.
- Persaud B., Turner S., Chou M., Koorey G., Lyon C. (2008) International Road Safety Comparisons Using Accident Prediction Models, 87th Transportation Research Board (TRB) Annual Meeting, Washington DC, USA, Jan 2008.
- Saleh M. (2008) Hot Mix Asphalt Stiffness Moduli: Laboratory versus Field, 6th International Conference on Road and Airfield Pavement Technology, Sapporo Japan, Jul 2008.
- Saleh M., Radwan E., Dixit V. (2008) Comparison between the Simplified AUSTROADS Sublayering Approach and the Exact Nonlinear Solutions for the Unbound Flexible Pavements, 6th International Conference on Road and Airfield Pavement Technology, Sapporo Japan, Jul 2008.
- Seville E., Dantas A., Le Masurier J., Vargo J., Brunson D., Wilkinson S. (2008) Organisational Resilience: Researching the reality of New Zealand Organisations; Journal of Business Continuity and Emergency Planning, Volume 2, Issue 3, pp 258-266, April 2008.
- Sugioka K., MacRae G., Saleh M., Beamish M., (2008) Life Time Evaluation of Orthotropic Steel Bridge Decks, 2nd International Orthotropic Bridge Conference, Sacramento, USA, Aug 2008.

Recent Student Research Reports/Theses

Note: These are available for borrowing from the University of Canterbury library. MET Theses are also available online.

- Doherty G. (2008) Crash risk on curves: the classification of the crash risk from loss of control at corners on the NZ state highway network; MET Research Report, University of Canterbury, 275pp.
- Fowler M. (2008) Effect of Road Network Bendiness on Traffic Crash Occurrence in New Zealand; MET Thesis, University of Canterbury, 185 pp.
- Hughes T. (2008) An instrumented bicycle data collection method for developing models to predict the perception by cyclists of the cycling environment; MET Research Report, University of Canterbury, 74 pp.
- Landon-Lane R. (2008) Driver behaviour at low-visibility, low-radius curves; MET Research Report, University of Canterbury, 144pp.
- Munakata K. (2007) Examination of correlation between travel times on links; MET Research Report, University of Canterbury, 210pp.
- Rice W. (2007) How we got to school: a study of travel choices of Christchurch primary school pupils; MET Thesis, Univ of Canterbury, 173pp.
- Wilkins A. (2008) Intersection Performance and the New Zealand Left Turn Rule; MET Thesis, University of Canterbury, 160pp.



Future transport engineers in the making? Glen Koorey oversees some Intermediate School students trying to solve a transport routing problem on the Department's display board. Over 400 Year 7/8 children visited the University in December 2008 to learn about science and technology careers

For further information, please contact:

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MET News : Vol 5, Dec 2008
Editor: Glen Koorey
Design : Melody Callahan