

ENTR401: Fundamentals of Transport Engineering - 2012

Course Outline

Aims and Objectives:

This course introduces the basic concepts and principles of traffic engineering and (to a lesser extent) transport planning and road management/design for those who not have been taught this material at an engineering undergraduate level (e.g. ENCI412) or in previous other qualifications. It is an ideal pre-requisite for further study in Canterbury's postgraduate transportation programme.

The objectives of the course are to:

- Provide participants with a solid grounding in the fundamentals of traffic engineering, transport planning and contextual issues;
- Develop participants' practical skills in traffic/transportation and knowledge of how and when they should be applied;
- Cover the theory of good traffic engineering practice;
- Enable participants to recognise and deal effectively with traffic/transport situations where standard methods are unlikely to work well.

This is a ***self-guided study course***, requiring the student to do the bulk of the study and assignment work on their own at their home location, using the physical/online resources provided and with the guidance of the course lecturers.

Indicative Course Content

The course will comprise teaching material covering the following topics:

1. Road Hierarchy, Planning and Design of Urban Street Networks
2. Human Factors in Transport
3. Traffic Link Flow Theory, Intersection Flow Theory
4. Rural Road Design, Highway Capacity Analyses
5. Unsignalised & Signalised Intersections - Operation and Design
6. Traffic Studies, Basics of Statistical Analysis
7. Accident Reduction and Prevention
8. Traffic Control Devices and Street Lighting
9. Planning & Design for Cycling, Pedestrians & Local Area Traffic Mngmt
10. Public Transport Planning and Bus Facility Design
11. Introduction to Transportation Planning
12. Transport Sustainability and Travel Demand Management
13. Roading and Traffic Administration in NZ
14. Road Construction and Network Asset Management
15. Introduction to Traffic/Transport Software Packages

Possible Teaching Block:

Although ENTR401 is essentially a self-study course, subject to course numbers a short 1-2 day teaching block ***may*** be held in **Christchurch** at a date to be determined. The block would likely comprise tutorial/assignment sessions, supplementary lectures, and a field trip of local traffic/transport facilities.

The teaching block would be held at the University of Canterbury, Ilam (venue TBC). Students would need to make their own travel/accommodation arrangements.

Course Assessment:

- Theoretical Calculation Exercises (due ~4 weeks before final exam) 25%
- Street Network Review Assignment (due one week before final exam) 25%
- Final Exam (date TBC depending on enrolment period) 50%

At the start of the course, students will be provided with a series of theoretical calculation exercises to complete (with notes from the first part of the course). Tutorial sessions may be provided to go over sample exercises and to assist students with their assignment work.

Following this assignment, students will undertake a review of a neighbourhood block near their home and assess the transport issues affecting this area (e.g. road hierarchy; intersection controls; road capacity; road safety issues; provision for walking/cycling/PT). The assignment will require students to apply their course material and other resources to a practical real-world situation and identify any aspects requiring attention.

The final exam will be a 3-hour closed-book exam designed to test students' understanding and application of the material presented during the course and covered in the lecture notes and textbook. Students from outside of Christchurch will be able to arrange to sit this exam in their home town with a suitable local supervisor.

While a **minimum 50% overall grade** for the year is the usual benchmark for passing, to guarantee a pass in the course you must also achieve **at least 40%** in both coursework and examination total marks.

Teaching Staff:

This course will be taught by a number of people (*University of Canterbury unless stated*):

- Prof Alan Nicholson (Course Coordinator)
- Dr Glen Koorey

Target Audience:

This course is available to students enrolled in Canterbury's postgraduate transport programme (i.e. MET, MEngSt, or PGCertEng; see www.met.canterbury.ac.nz for more information). It is designed particularly for students wishing to enter the programme but lacking the normal subject pre-requisites. Generally, programme staff will have indicated to students if they are expected to take this course as part of their qualification.

The course will benefit practising engineers, technicians, planners and other transport practitioners with little or no formal training in traffic engineering and transport planning. No pre-requisite knowledge in the course topics is necessary, although some previous maths/statistics/science, traffic engineering or transport planning background is useful.

Course Workload and Learning Resources:

This course is worth 0.1 EFTS (12 points), which translates into a nominal average of **120 hours** of lectures, assignment work and other study time for a typical student.

All participants will be given detailed lecture notes for each topic. Links to useful websites and electronic documents, including relevant Austroads guidelines, will also be provided on the University's online teaching system, **Learn**. Learn will also be used for course discussions and tutorial work. The textbook "*Traffic Engineering & Management*" (Institute of Transport Studies, Monash University, Australia, 2003) is also recommended for purchase (~\$140) or a similar textbook; programme staff can advise on this.

Enrolment:

The 2012 UC course fee for domestic students is **\$622** incl. GST, plus a Student Services Levy (varies). This fee includes provision of all course notes and electronic resources.

Students may apply to enrol in "ENTR401-12A" at any time during the year. This should ideally be prior to enrolling in other postgraduate transportation courses; students should discuss their enrolment with programme staff first. Completion of enrolment (documentation, fees, etc) is required before access to Learn and course notes can be provided. See www.canterbury.ac.nz/enrol/ for details on enrolling.

*For more information about this course, contact **Glen Koorey**, Civil & NatRes Eng Dept
Phone: (03) 364-2951, Email: Glen.Koorey@canterbury.ac.nz*

Postgraduate Transportation website: www.met.canterbury.ac.nz