CVEN90048 Transport Systems

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 48 hours (Lectures: 2 hours per week; Practicals: 2 hours per week) Total Time Commitment: Estimated 200 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Assoc Prof Russell Thompson
Contact:	Assoc Prof Russell Thompson **rgthom@unimelb.edu.au (mailto:rgthom@unimelb.edu.au)**
Subject Overview:	**AIMS** In this subject students will prepare for transport-related civil engineering practice via the development of core quantitative, analytical, policy, and engineering design skills applicable to a range of transport systems, modes, planning, project, or assessment and decision scenarios. Three key themes will develop transport-related understanding for students completing the program. The first of these is ‘transport strategy and analysis’, which includes: an introduction to the theory and practice of transport planning; location-based transport performance analysis and statistics; basic prediction of travel demand - and matching of demand and capacity via appropriate systems. The second theme is ‘integrated transit networks’ which revolves around: an understanding of multi-modal public transport and variations in capacity; transit and land use planning; mass transit facilities; and an introduction to basic rail infrastructure engineering. The third theme is ‘road transport’, which covers: freight and logistics; heavy vehicle safety; geometric road design; as well as signalling and road management. On completion of the program, students will able to leverage the core technical skills and key transport concepts they have learned into project-based applications and working scenarios. They will also be in a strong position to undertake transport-related work with recourse to professional-level communication and inter-personal skills with a transport focus. CVEN90048 Transport Systems provides a transport-specific learning experience that relates to, builds-on, and extends from the skills and competencies developed via the following Civil Engineering subjects: CVEN90043 Sustainable Infrastructure Engineering and CVEN90045 Engineering Project Implementation. **INDICATIVE CONTENT** Project work will be undertaken in the following technical areas: 1 Transport Strategy & Analysis: transport strategy development; the incorporation of strategic transport contexts into project work; effective management of public health-

	related questions in transport projects; infrastructure planning and design for non-motorised transport (walking and cycling); Travel Demand Management (TDM) initiatives; basic multimodal transport behaviour modelling calculations; and the use, sources and application of travel behaviour statistics; transport project business case and benefit/cost approaches 2 Integrated Mass Transit Networks: public transport planning and basic 'line capacity' analysis; public transport modes; transit oriented development principles and strategies; application of station design principles to station projects; station access planning and access infrastructure concepts; rail engineering basics 3 Road Transport: freight and logistics and heavy vehicle safety strategies; basic processes and calculations for carriageway and geometric road design; traffic signal phasing calculations; contemporary traffic management strategies. Sub-topics covered include: • Transport strategy • The role of transport in the evolution and development of cities • Health issues and impacts of transport • Transport surveys and survey methods • Non-motorised transport options • Travel demand management • Multi-modal travel behaviour modelling • Transport project appraisal and basic project benefit/cost economics • Public transport systems and networks • Public transport capacity • Transit oriented development • Station design • Station access planning/infrastructure • Rail track engineering • Freight and logistics and heavy vehicle safety • Geometric road design • Traffic signalling • Road traffic management approaches. This subject has been integrated with the Skills Towards Employment Program (STEP) and contains activities that can assist in the completion of the Engineering Practice Hurdle (EPH).
Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** On completion of this subject the student is expected to: 1 Develop and communicate holistic strategies for transport systems and their interaction with other infrastructure that recognises social, environmental and economic objectives 2 Analyse basic line-haul demand and capacity scenarios for public transport 3 Conduct basic design of road geometry, and traffic signalling & management strategies to ensure safe and efficient road transport 4 Analyse and evaluate existing or proposed transport projects using technical, economic, social and environmental criteria 5 Conduct conceptual design and enhancement for a localised transport infrastructure scenario.
Assessment:	Tutorial problems, derived from the lecture material, submitted weekly (20%). Requires approximately 25 – 30 hours of work in total. Intended Learning Outcomes (ILOs) 1 to 5 are addressed in this assessment A group assignment (30%) requiring 2000 words per student, on developing a sustainable transport plan. Requires approximately 35 – 40 hours of work per student and due in Week 11. ILOs 1 to 5 are addressed in this assignment A 2 hour end-of-semester examination (50%). ILOs 1 to 5 are addressed in this examination
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Having completed this subject, the student is expected to be able to:

1 Execute basic research and problem-solving skills - including problem identification, data sourcing, analysis formulation and execution, and the nomination or provision of viable solutions
2 Organise themselves into effective working groups that replicate real-world (transport) project environments
3 Manage personal time and workload efficiently, to deliver needed outputs in a timely manner (as per real-world transport project environment)
4 Execute effective, professional-level verbal communication and discussion around current real-world transport issues and concepts, as well as professional-level written communication skills (for transport themes and projects)
5 Understand social, cultural, global, and environmental responsibilities and the relevance of sustainable development principles
6 Take part in meaningful lifelong learning and ongoing professional skills development (with a transport focus).

Notes:

LEARNING AND TEACHING METHODS

Key learning and teaching methods include:

Lectures and large-group discussion of core themes and concepts. These are delivered by a academic staff members. Lectures draw on real world case studies, key policy reference points and the introduction and description of basic analytical procedures or calculations. Lecturers employ multimedia, public speaking, and Socratic dialogue methods. Two hours of lectures are offered for each week of the academic program.

Engagement with required and suggested readings and information sources. Readings and information sources cover a mixture of policy documents, journal papers, online references and databases, government reports or guidelines, and other textual resources. Students are expected to undertake between 1-2 hours per week of reading and resource review to support concept acquisition and knowledge contextualisation, as well as to assist with execution of tutorial exercises, assignment work, and exam.

Tutorial and tutorial exercises in smaller-group format. This approach includes classic Q&A and calculation exercises. Tutors are primarily drawn from the specialist lecturers (from both academia and industry) tutoring in smaller groups, on specialised topics, with reference to the weekly tutorial exercises. Roughly one hour of tutorial time is available per week of the program.

INDICATIVE KEY LEARNING RESOURCES

AUSTROADS, (2009). Guide to Traffic Engineering and Management, Sydney, Parts 2, 3, 4, 6, 9, 10 & 13.

Low, N. (2013). *Transforming Urban Transport, The Ethics, Politics and Practices of Sustainable Mobility*, EarthScan, Routledge, Oxon.

The Victorian Integrated Travel Survey (online database) **www.transport.vic.gov.au/research/statistics/victorian-integrated-survey-of-travel-and-activity (http://www.transport.vic.gov.au/research/statistics/victorian-integrated-survey-of-travel-and-activity)**

The Victorian Transport Statistics Portal (online database) **www1.transport.vic.gov.au/VTSP (http://www1.transport.vic.gov.au/VTSP/homepage.html)**

Richardson, A.J., Ampt, E.S. and Meyburg, A.H. (1995). *Survey Methods for Transport Planning*. Eucalyptus Press.

Government of Victoria (2008). Victoria's Road Safety Strategy – arrive alive. Government of Victoria **www.roadsafety.vic.gov.au (http://www.roadsafety.vic.gov.au)**

Austroads, 2009. Austroads Guide to Road Design: Part 3 – Geometric Design. Austroads

VicRoads, 2013. Freeway Ramp Signals Handbook (online). **https://www.vicroads.vic.gov.au/business-and-industry/technical-documents/freeway-ramp-signals-handbook (https://www.vicroads.vic.gov.au/business-and-industry/technical-documents/freeway-ramp-signals-handbook)**

CAREERS / INDUSTRY LINKS

The Department of Transport, Planning and Local Infrastructure is involved in providing input to the course material as well as data for the major assignment.

Students are also alerted to student membership opportunities at these organisations and encouraged to consider applying for membership.

Related Course(s): Doctor of Philosophy - Engineering

	Master of Energy Systems Master of Information Technology Master of Philosophy - Engineering Master of Urban Planning
Related Majors/Minors/ Specialisations:	B-ENG Civil Engineering stream MIT Spatial Specialisation Master of Engineering (Civil with Business) Master of Engineering (Civil)