CVEN90048 Transport Systems

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2014.
Time Commitment:	Contact Hours: 48 hours, comprising of two hours of lectures and two hours of practical 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
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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 successful completion of the subject, students should be able 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. Requires approximately 25 – 30 hours of work in total (20%). A group assignment, requiring 2000 words per student, on developing a sustainable transport plan. Requires approximately 35 – 40 hours of work per student. Due in Week 11 (30%). A 2 hour end-of-semester examination (50%) All Intended Learning Outcomes are addressed in the assessment items.
Prescribed Texts:	None
Recommended 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 mixture of academic staff members and industry practitioners. 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. A variety of lecturers are used (around 6-7 lecturers per semester-long program) – with each lecture delivered by a recognised specialist in the relevant topic or field. Roughly 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.
Groupwork “studios” for project assignments. This learning approach replicates real-world project environments by establishing a weekly semi-supervised studio, during which student teams can focus on progressing their group and individual assignments. As a semi-supervised environment, students encounter a self-directed learning scenario, and engage in basic group support and knowledge exchange. The quality and effectiveness of student’s self-directed learning and groupwork in the studio sessions tends to relate very closely to actual attainment in assignment assessment. Studios are supervised for one hour per week in smaller-group class sizes.

INDICATIVE KEY LEARNING RESOURCES
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)**
Hale, C., 2011. New Approaches to Strategic Urban Transport Assessment. Australian Planner
Bratzel, S., 1999. Conditions of success in sustainable urban transport policy. Transport Reviews
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
Oregon State University, 2012. Transportation Engineering Online Manual – Signal Timing Design **www.webs1.uidaho.edu/niatt_labmanual/Chapters/signaltimingdesign/theoryandconcepts (http://www.webs1.uidaho.edu/niatt_labmanual/Chapters/signaltimingdesign/theoryandconcepts)**
VicRoads, 2012. Freeway Ramp Signals Handbook (online). **www.vicroads.vic.gov.au/Home/Moreinfoandservices/RoadManagementAndDesign/DesignStandardsManualsNotes/ManagedFreewayManuals/FreewayRampSignalsHandbook (http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/RoadManagementAndDesign/DesignStandardsManualsNotes/ManagedFreewayManuals/FreewayRampSignalsHandbook)**
Department of Transport, 2012. Introduction to Transport Demand Modelling. DOT, Victoria

	Department of Transport, 2012. Technical Guidelines. DOT, Victoria Department of Transport, 2012. Summary Notes on Transport Demand Modelling. DOT, Victoria Department of Transport, 2008. Melbourne Metropolitan Freight Movement Task. DOT, Victoria VAGO – Victorian Auditor General's Office, 2012. Victorian Auditor General's Report on Public Transport Performance. VAGO VTPI – Victoria Transport Policy Institute, 2nd ed, 2009. Transportation Cost and Benefit Analysis: Techniques, Estimates and Implications. **www.vtpi.org/tca (http://www.vtpi.org/tca)** Hale, C., 2011. Station Access and the Modern Transit System. ATRF 2011. **www.worldtransitresearch.info/research/4650 (http://www.worldtransitresearch.info/research/4650)** Green, C. and Hall, P., 2010. Better Rail Stations. Dft, UK. **http://webarchive.nationalarchives.gov.uk/20111005174329/http://www.dft.gov.uk/publications/better-rail-stations (http://webarchive.nationalarchives.gov.uk/20111005174329/http://www.dft.gov.uk/publications/better-rail-stations)** **CAREERS / INDUSTRY LINKS** Industry connections are primarily provided via personal access to industry-based lecturers and tutors. In addition, the subject co-ordinator is possessed of high-level and ongoing experience in major Australian transport projects, the benefit of which is applied and available to students in every aspect of subject learning and assessment. External organisations directly involved in delivery of the 'Transport Systems' academic program include: • ARRB – Australian Roads Research Board In addition, email alerts and circulars are provided via the subject web portal to encourage students to attend relevant events initiated by the following organisations: • Engineers Australia • Planning Institute of Australia • Australian Institute of Traffic Planning and Management Students are also alerted to student membership opportunities at these organisations and encouraged to consider applying for membership.
Related Course(s):	Master of Energy Systems Master of Information Technology Master of Philosophy - Engineering Master of Urban Planning Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	B-ENG Civil Engineering stream Master of Engineering (Civil with Business) Master of Engineering (Civil) Master of Engineering (Geomatics)