

Background and Aims

This unit develops students' understanding of the network models used in transport planning. The emphasis is on strategic network models which are used for longer term network planning as opposed to operational considerations. The traditional four step models of trip generation, trip distribution, mode choice and traffic assignment are considered in detail. The capabilities of commercial network modelling packages are reviewed.

After completing this unit participants will be:

- understand the component models and the modelling framework used in transport network modelling
- appreciate the strengths and weaknesses of various transport models
- be able to calibrate and apply transport network models
- be aware of the role of analytic modelling in transport planning

Details of the structure of the unit are provided over the page

Enrolment Options

Enrol as a single unit or as part of either the Graduate Certificate in Transport and Traffic, Postgraduate Diploma in Transport and Traffic, or Masters in Transport and Traffic.

Off-Campus Study Mode

This unit is offered by Off-Campus (distance education) and there is no requirement for participants to attend lectures. Study guides, comprising a comprehensive set of course notes, are sent following enrolment. Further support is provided through a unit web site and via e-mail. The lecturer is available to answer questions and to provide assistance as necessary throughout the semester. Assistance can be arranged by email, facsimile, mail, telephone or through the discussion groups on the unit web site. Assessment comprises two assignments and an examination (worldwide exam venues are available).

Unit Co-ordinator



Majid Sarvi graduated as a Civil Engineer and received his master and PhD in Traffic and Transportation Engineering. Majid worked for a few years at Tokyo University where his research focussed on Intelligent Transport System. Majid joined Monash University in 2003.

Enrolment or General Course Enquiries:

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Structure

The unit is structured around 10 topics which are generally associated with one week of study

Topic	<i>After completing this topic, participants will:</i>
1. A Framework for Model Development	<ul style="list-style-type: none"> • understand the steps involved in developing a mathematical model • appreciate the foundations of a model of transport systems behaviour
2. Introduction to Four Step Modelling	<ul style="list-style-type: none"> • be familiar with the structure of the four step transportation planning model system • be able to apply basic trip generation, trip distribution, mode choice and traffic assignment models
3. Advanced Trip Generation Modelling	<ul style="list-style-type: none"> • appreciate the methodologies used in advanced trip generation models • understand the impacts of data aggregation on model calibration and prediction
4. Trip Distribution Modelling	<ul style="list-style-type: none"> • be able to calibrate a singly constrained gravity model with a general deterrence function • understand where 'K' factors are used and appreciate their advantages and disadvantages
5. Disaggregate Mode Choice Modelling	<ul style="list-style-type: none"> • understand the behavioural theory which provides the theoretical foundation for disaggregate mode choice models • appreciate the implications of the 'Independence of Irrelevant Alternatives' property of the logit model • understand the different classes of variables which can be incorporated into a mode choice model
6. Traffic Assignment	<ul style="list-style-type: none"> • understand the various techniques used to assign traffic to a network • understand how shortest paths through networks are determined • appreciate how tolls can be accounted for in traffic assignment
7. Land Use Modelling and Equilibrium	<ul style="list-style-type: none"> • understand the importance of land use/transport interaction • appreciate the different types of land use models and the relevance of accessibility to those models • be aware of the different techniques used to achieve equilibrium in the transport modelling system
8. Model Transferability	<ul style="list-style-type: none"> • understand the distinction between temporal and spatial transfer versus transferability • understand the measures available to evaluate model transferability
9. GIS and Commercial Software Packages	<ul style="list-style-type: none"> • have an understanding of GIS applications • appreciate the capabilities and features of some of the commercially available software packages
10. Contemporary Issues	<ul style="list-style-type: none"> • understand the distinction between accuracy and uncertainty in modelling • appreciate the factors which contribute to the accuracy and uncertainty in model forecasts • appreciate the criteria applied to gauge the adequacy of models to be used for prediction • be aware of developments in travel forecasting tools