CVEN9405

Urban Transport Planning Practice

Term 3, 2022

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Taha Hossein Rashidi	rashidi@unsw.edu.au		H20 113	02 09385 5063

School Contact Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

Course Details

Units of Credit 6

Summary of the Course

Analytical techniques for urban land use/transport planning practice. Planning methodology: traffic generation, trip distribution, modal-choice, traffic assignment, evaluation. Land use forecasting: calibration and verification of behavioural models, application of mathematical programming models, case studies, public transport problems.

Course Aims

This course introduces the conventional four-step travel forecasting trip distribution models, mode choice models, highway paths and assignment, transit paths and assignment, validation and acceptance testing, and forecasting. The course will also allow students to practice using transportation forecasting software in a project assignment. The focus is on the application of transport models in real world settings.
The following describes the learning goals that this course aims to achieve and details how the achievement of these goals will be assessed.

- Apply concepts, techniques and principles that underlie transport planning and analysis.
- Manage the impacts of future trends in transport management, planning and analysis.
- Use contemporary modelling techniques to solve problems in transport planning and analysis.
- Engage in lifelong learning, reflective thinking and self and peer assessment.
- Communicate effectively in verbal, written and group contexts to a professional standard.

Course Learning Outcomes

1. Evaluate transport projects through a variety of economic analysis methodologies (e.g. cost-benefit analysis, multi-criteria analysis)
2. Describe the relationships between Land Use, Transport and the Environment
3. Explain basic concepts of four-step travel demand modelling and apply computational methods related to each step
4. Illustrate transport system equilibrium with simple examples of land use - transport interaction
5. Evaluate transport system conditions (including public transport system) based on demand forecasts and plan for the future

This course is designed to address the learning outcomes below and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A.

After successfully completing this course, you should be able to:

Learning Outcome		EA Stage 1 Competencies
1.	*Recognise and understand the importance of transport systems within the framework of sustainable development.*	*PE1.1, PE1.3, PE1.6*
2.	*Describe the relationships between Land Use, Transport and the*	*PE1.1, PE1.2, PE1.3, PE1.5*

	Environment.	
3.	*Apply computational methods related to various stages of transport planning and travel demand forecasting, including trip generation, trip distribution, mode choice and traffic assignment.*	*PE1.1, PE1.2, PE1.3, PE2.1, PE2.2, PE2.3*
4.	*Illustrate transport system equilibrium with simple examples of land use and transport interaction.*	*PE1.1, PE1.2, PE1.3, PE2.1, PE2.2*
5.	*Evaluate the transport system conditions based on demand forecasts.*	*PE2.1, PE2.2, PE2.3, PE3.4*
6.	*Apply computational method for the planning of public transport systems.*	*PE1.1, PE1.2, PE1.3, PE2.1, PE2.2, PE2.3*
7.	*Evaluate transport projects through a variety of economic analysis methodologies (e.g. cost-benefit analysis, multi-criteria analysis)*	*PE1.1, PE1.2, PE1.3, PE2.1, PE2.2, PE2.3, PE3.4*
8	*Describe and apply urban planning concepts for the proposal of transport infrastructure*	*PE1.1, PE1.2, PE1.3, PE2.1, PE2.2, PE2.3, PE3.4*

Teaching Strategies

The teaching strategies that will be used and their rationale. Give some suggested approaches to learning in the course.

Private Study

- Review lecture material and textbook
- Do set problems and assignments
- Join Moodle discussions of problems
- Reflect on class problems and assignments
- Download materials from Moodle
- Keep up with notices and find out marks via Moodle

Lectures

- Find out what you must learn
- See methods that are not in the textbook
- Follow worked examples
- Hear announcements on course changes

Demonstrations

- Be guided by demonstrators
- Practice solving set problems
- Ask questions

Assessments

- Demonstrate your knowledge and skills
- Demonstrate higher understanding and problem solving

Laboratory Work

- Hands-on work, to set studies in context

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Online Quiz	5%	Not Applicable	1, 2, 3
2. Midterm	20%	Not Applicable	3, 4, 5
3. Assignment	25%	25/11/2022 11:59 PM	1, 2, 3
4. Final Exam	50%	Not Applicable	1, 2, 3, 4, 5

Assessment 1: Online Quiz

The online quiz will be administered via Moodle.

The Moodle quiz will be based on the material covered in Week 1-2 lectures and workshops.

The Moodle quiz will be an open book and is intended to help prepare the students for the final exam.

The quiz will be available during the **Week 3 workshop on** Thursday, the **29th of September Thursday, from 14:00 until 15:00**.

Failure to complete a quiz within the accessible time period will result in a zero mark.

The questions will be marked based on technical accuracy.

Assessment 2: Midterm

A mid-session exam will be administered during the workshop on **3rd November, Thursday between 13:00 and 15:00 (Week 8)**.

The exam will cover course material (Week 3 to Week 7 Lectures/Workshops/Reading resources) and is intended to assess students' knowledge of the expected learning outcomes, prepare students for the final exam, and discourage last-minute cramming.

Failure to complete the exam within the accessible time period will result in a mark of zero.

The exam will be assessed on technical accuracy.

Assessment 3: Assignment

Due date: 25/11/2022 11:59 PM

This assignment will be based on the topics covered in Weeks 5 to 10 lectures and workshops.

The assignment is designed to assess students understanding of the expected learning outcomes related to trip distribution, mode choice and traffic assignment of the 4-step model.

The assignment will be made available at the beginning of Week 7. The last date for submitting the

assignment is **25th November, Friday 11:59 PM**.

The assignment is for individual assessment and must be submitted via the link available on the Moodle course page. The assignment must have a cover sheet according to UNSW template. The expected outcome of this assignment is to prepare students for the final exam and discourage last minute cramming. The assignment will be assessed based on the technical accuracy of solutions and clarity in the uploaded report.

Assessment 4: Final Exam

A 2-hour final exam will be administered at the end of the term to assess the students' knowledge of the material covered throughout the entire course.

The exam will be assessed on technical accuracy.

There is 40% hurdle requirement for the exam to pass the course. A mark lower than 40% in the final exam results in failing the course regardless of other assessments.

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Schedule

View class timetable

Timetable

Date	Type	Content
O-Week: 5 September - 9 September		
Week 1: 12 September - 16 September	Lecture	**Lecture Content:** Transport Planning Background 4 Step Modelling Approach Cost Benefit Analysis
	Workshop	**Workshop Content:** Practice Problems: Cost-Benefit Analysis
Week 2: 19 September - 23 September	Lecture	**Lecture Content:** Land Use and Transport Introduction to Statistics (1)
	Workshop	**Workshop Content:** Practice Problems: Cost-Benefit Analysis
Week 3: 26 September - 30 September	Lecture	**Lcture COntent:** Introduction to Statistics (2) Introduction to Trip Generation
	Workshop	**Workshop Content:** Practice Problems: 4 Step Models and Land Use
	Assessment	Moodle Quiz
Week 4: 3 October - 7 October	Lecture	**Lecture Content:** Trip Generation Rate

		Cross-classification Growth Factor Regression Analysis
	Workshop	**Workshop Content:** Practice Problems: Basic Statistics
Week 5: 10 October - 14 October	Lecture	**Lecture Content:** Activity-based approach Data sources Sampling and sample size Stated preferences survey
	Workshop	Practice Problems: Trip Generation
Week 6: 17 October - 21 October		UNSW Flexibility Week
Week 7: 24 October - 28 October	Lecture	**Lecture Content:** Growth Factor Models Gravity Model
	Workshop	**Workshop Content:** Trip Distribution
Week 8: 31 October - 4 November	Lecture	**Lecture Content:** Utility Theory MNL Models NL Models
	Workshop	**Workshop Content:** Mode Choice
	Assessment	Midterm Exam
Week 9: 7 November - 11 November	Lecture	**Lecture Content:**

		Static User Equilibrium
	Workshop	**Workshop Content:** Traffic Assignment
Week 10: 14 November - 18 November	Lecture	**Lecture Content;** Course Review Dynamic User Equilibrium & Applications Applications of 4-Step Modelling
	Workshop	**Workshop Content:** Practice Problems and Assignment Reviews

Resources

Prescribed Resources

Modelling Transport, 4th Edition, Juan de Dios Ortuzar, Luis G. Willumsen, ISBN: 978-0-470-76039-0

International Encyclopedia of Transportation Reference Work • 2021, Transportation Statistics and Databases by Taha Rashidi , Pages 574-586

Recommended Resources

- AUSTROADS (1996) Benefit Cost Analysis Manual. Austroads Publication No. AP-42/96. Sydney.
- Urban Transportation Planning Hardcover – December 20, 2000 by Michael Meyer and Eric Miller
- https://www.planning.dot.gov/documents/briefingbook/bbook_07.pdf
- Black, J. (1981) Urban Transport Planning: Theory and Practice, (London: Croom Helm).
- Blunden WR and Black JA (1984) The Land use/Transport system, Pergamon Press
- Hensher, D.A. and Button, K.J. (2000) Handbook of Transport Modelling, Pergamon.

Submission of Assessment Tasks

Please refer to the Moodle page of the course for further guidance on assessment submission.

UNSW has a standard late submission penalty of:

- 5% per day, for all assessments where a penalty applies, capped at five days (120 hours), after which a student cannot submit an assessment, and no permitted variation.

Academic Honesty and Plagiarism

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:

https://student.unsw.edu.au/plagiarism

Academic Information

Final Examinations:

Final exams in T3 2022 will be held online between 25th November - 8th December 2022 inclusive, and supplementary exams between 9th - 13th January 2023 inclusive. You are required to be available on these dates. Please do not to make any personal or travel arrangements during this period.

ACADEMIC ADVICE

- Key Staff to Contact for Academic Advice (log in with your zID and password): https://intranet.civeng.unsw.edu.au/key-staff-to-contact-during-your-studies-at-unsw
- Key UNSW Dates - eg. Census Date, exam dates, last day to drop a course without academic/financial liability etc.
- CVEN Student Intranet (log in with your zID and password): https://intranet.civeng.unsw.edu.au/student-intranet
- Student Life at CVEN, including Student Societies: https://www.unsw.edu.au/engineering/civil-and-environmental-engineering/student-life
- Special Consideration: https://student.unsw.edu.au/special-consideration
- General and Program-Specific Questions: The Nucleus: Student Hub
- Book an Academic Advising session: https://app.acuityscheduling.com/schedule.php?owner=19024765

Disclaimer

This course outline sets out description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle should be consulted for the up to date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline (as updated in Moodle), the description in the Course Outline/Moodle applies.

Image Credit

Mike Gal.

CRICOS

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Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.