

Lectures: Tuesday 9:30 AM – 12:20 PM, NREF 2-080

Instructor: Dr. Amy Kim, ICE 6-269, 780.492.9203, amy.kim@ualberta.ca

Office Hours: By appointment (send email)

Objective: To provide an introduction to basic systems analysis concepts for managing transportation demand. We will focus on supply-side concepts as well as techniques for modelling travel behaviour and demand. We cover microeconomic principles of consumer behaviour and engineering production; utility theory, disaggregate choice and market demand models; transportation network equilibrium. The examples in class and in assignments will focus on applications of lecture materials to various transportation problems.

Class website: On eClass: <https://eclass.srv.ualberta.ca/>
Access is password protected and available only to those enrolled. Assignments, solutions, lecture slides/notes, and other relevant information will be posted there.

Requirements:

5 assignments	20%
Midterm exam	25%
Final exam	45%
Participation & attendance	10%

Assignments: Assignments will be posted on the class website. They will be due, in hard copy, by end of business day on date indicated on handout (hand it to me or slide under door). Please complete all 5 assignments. Late assignments will be penalized at 25% per day.

Final Exam: The final exam will be held on the last day of class. Details will be discussed later.

Reading List: Select readings will be taken from the following sources. Other references may be provided throughout the class. First 3 references are on reserve at Cameron Library; the last 3 are available online. Older editions are usually available too.

- N Nicholson, Walter: *Microeconomic Theory: Basic Principles and Extensions*, 11th Ed., South-Western, 2012. (On reserve)
- PR Pindyck, R. & Rubinfeld, D.: *Microeconomics*, 5th Ed., Prentice Hall, 2001. (On reserve)
- W Washington, Karlaftis & Mannering: *Statistical and Econometric Methods for Transportation Data Analysis*, 2nd Ed., CRC Press, 2011. (On reserve)
NOTE: The first edition of this book (2003) is available online through the library!
- DN DeNeufville, Richard: *Applied Systems Analysis*, McGraw-Hill, 1990.
http://ardent.mit.edu/real_options/ASA_Text
- KB Koppelman, Frank S. & Bhat, Chandra: *A Self Instructing Course in Mode Choice Modeling: Multinomial and Nested Logit Models*, 2006.
http://www.ce.utexas.edu/prof/bhat/COURSES/LM_Draft_060131Final-060630.pdf
- T Train, Kenneth: *Discrete Choice Models with Simulation*, 2nd Ed., Cambridge University Press, 2009. <http://elsa.berkeley.edu/books/choice2.html>

Academic Integrity:

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Policy about course outlines can be found in §23.4(2) of the University Calendar.

Class Schedule

Please note that this schedule may be subject to changes throughout the term.

Lecture	Date	Topic	Recommended readings	Assignment due dates
1	01/08	Introduction; supply & demand; optimization	N(1)/PR(2: 19-30); DN(3)/N(2: 21-55)	
	01/15	<i>Class cancelled (TRB)</i>		
2	01/22	Production functions; cost functions; examples	DN(2)/N(9); DN(4)/N(10)	
3	01/29	Utility theory	N(3)/PR(3.1-2; pp 141-3)	Assignment 1
4	02/05	Individual and market demand functions; market equilibrium	N(4)/PR(4.1-2); N(5)/PR(4.3-4); N(11-13)/PR(8-10); S(1-3)	
5	02/12	Model estimation	<i>Handout</i>	Assignment 2
	02/19	<i>Reading week (no class)</i>		
	02/26	MIDTERM		
6	03/05	Disaggregate choice theory; random utility models	T(p 3-5; ch2), KB(p 1-5; Ch 2-3); T(3), KB(4), W(13.1-13.4)	Assignment 3
7	03/12	Logit	T(3), KB(4), W(13.3, 13.5)	
8	03/19	Nested logit	T(4), KB(8), W(13.6)	Assignment 4
9	04/02	Network equilibrium	S(5-6)	
10	03/26	Other models (mixed logit, probit, ordered); data; examples	T(6), W(16.1,14)	Assignment 5
	04/09	FINAL		

- All reading references are from the text editions listed previously. The libraries have older editions that likely do contain all the readings, but in different chapters and pages.
- If you would like a refresher on statistics basics you can read Nicholson pp 67-76.