UNIVERSITY OF ALBERTA
Department of Civil and Environmental Engineering

CIV E 613 – Human Behaviour in Transportation

Fall 2025

Course Instructor: Stephen D. Wong, Ph.D., P.Eng.

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Dr. Wong's Office Hours:

- Tuesday 2:00 PM to 3:30 PM
- Wednesday 11:00 AM to 1:00 PM
- No office hours during Reading Week

Lecture: Tuesday Thursday 9:30AM - 10:50AM in NRE 2-080

Course Objectives

Upon completion of the course, students will be able to:

- Design stated and revealed preference surveys, qualitative interview guides, and focus group moderation guides;
- Define, describe, and provide examples of utility theory and utility equations;
- Identify appropriate variables for discrete choice models;
- Estimate a variety of discrete choice models for transportation problems using existing software;
- Critically analyze models throughout their transportation careers
- Communicate human behaviour concepts, methods, and results to a variety of audiences;
- Understand methods for community engagement and human behaviour while considering ethics and equity.

Catalogue Description

Utility theory, microeconomic principles of behaviour, discrete choice models, parameter estimation techniques, forecasting, modelling transportation decisions, qualitative interviewing, focus groups, emerging data analysis methods, sampling and data preparation, and survey design.

Course Description

This course focuses on behavioral theories, quantitative methods, and qualitative methods to analyze human behaviour in the transportation engineering field. The course will cover microeconomic and discrete choice analysis techniques with applications for modeling travel behaviour and demand in networks. Specific topics will include: survey design, utility theory, discrete choice models, alternative decision rules, forecasting, qualitative interviewing, focus

groups, and emerging data analysis methods. Course content will address a variety of human-centred transportation problems through practical application.

Land Acknowledgement

The University of Alberta respectfully acknowledges that we are located on Treaty 6 territory, a traditional gathering place for diverse Indigenous peoples including the Cree, Blackfoot, Métis, Nakota Sioux, Iroquois, Dene, Ojibway/ Saulteaux/Anishinaabe, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

Contingency Planning for Disruptions and Other Challenges

Should the instructor be indisposed or otherwise unable to attend in-person lectures, a set of pre & post-recorded lectures will be made available via Canvas. Please be sure to stay on top of announcements made via email, in class, and in the Canvas.

Course References

- Ben-Akiva, M. E., & Lerman, S. R. (1985). Discrete choice analysis: theory and application to travel demand (Vol. 9). MIT Press.
- Thaler RH, Sunstein CR (2008) Nudge: Improving Decisions About Health, Wealth, and Happiness. Yale University Press, New Haven and London.
- Train, K. E. (2009). Discrete choice methods with simulation. Cambridge University Press.

Class website (Canvas)

Canvas will play a very central role in the delivery of this class this term. Please familiarize yourself with the CIV E 613 Canvas page, and its contents and functions. All class materials (lecture materials/recordings, assignments, supplemental references, etc.) will be posted here.

Course Deliverables and Grading

Assignments	50%
Final Project	30%
Midterm	15%
Participation	5%

Lectures

All lectures will be delivered in person, unless otherwise announced on Canvas. Lecture content/materials are copyrighted; hence students must not attempt to record or redistribute.

Assignments

There are 5 assignments in total. Assignments will be posted on Canvas and must be submitted electronically on the date and time indicated in each assignment handout. Always remember to include your name and ID. Given that life can be unpredictable, students are allocated a one-time pass that can be used for one assignment, which allows them to turn it in up to four days

late with no reduced credit. Any additional late submissions will be penalized 25% per day. Unsubmitted assignments and those four days late or more will receive no credit. Please note that writing quality will be considered in the grade. Writing must be technical and formal.

Project

The final project will be the culmination of this class. You are expected to use what you learned to develop, execute, and communicate a full research project. You will:

1) Identify a transportation problem
2) Develop several research questions that could help solve the problem
3) Develop a stated preference or revealed preference methodology for data collection and analysis
    a. You may use current data if collecting your own data is not feasible
    b. If you use current data, you will be graded more critically on your analysis
4) Collect data for analysis (if necessary)
5) Analyze data with discrete choice analysis
    a. A variety of model types should be tested and presented
6) Create several policy implications and recommendations from your analysis
7) Present the methods, analysis, and conclusions

Your projects will be conducted in groups of approximately 3 people. You may use your current research to do the project, but the project must be original. For those interested, the project can be designed as a paper publication. If you are interested in publishing the project as a paper, please make this known to me earlier so I can prepare. This will also include discussions with your advisor. An interim report is also required, which will include a summary of the research, a literature review, and methods.

Participation

You are expected to attend the lecture every day and I will make a note of who is present. Moreover, you are expected to participate in class discussions. Participation is worth 5% of your grade. Please note that I understand that you may not be able to attend all lectures. I will be granting some leeway for this grade to make it more flexible. However, the participation grade here is for your benefit and to help you learn!

Training

To embed equitable research practices in the class, you are required to conduct two trainings.

1) **GBA+ Training** (https://women-gender-equality.canada.ca/en/gender-based-analysis-plus/take-course.html)
    a. The content of this course focuses on the basic introduction to gender-based analysis (GBA) Plus. You will familiarize yourself with the key concepts of GBA Plus and recognize how various identity and social factors can influence the experience of federal government initiatives affecting different people. You will learn to identify how GBA

Plus can enhance the responsiveness, effectiveness and outcomes of federal government initiatives while applying some foundational GBA Plus concepts and processes.

2) **TCPS 2 Tutorial** (https://tcps2core.ca/welcome)
   a. The Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2) provides ethics guidance that applies to all research involving human participants – including their data and/or biological materials – conducted under the auspices of an institution eligible for funding by the federal Agencies (CIHR, NSERC, SSHRC).

      The online tutorial CORE-2024 (Course on Research Ethics) is an introduction to the TCPS 2 for the research community. It focuses on the TCPS 2 ethics guidance that is applicable to all research involving human participants, regardless of discipline or methodology.

      The Panel on Research Ethics highly recommends that all researchers who intend to engage in research involving human participants, as well as REB members and administrators, successfully complete the new CORE-2024. Institutions may also have policies in place that make its completion mandatory.

Communication Suggestions

Please be professional in your communications. I will respond to emails within 1-2 business days; please include "CIVE 613" in your subject line. Also, I encourage you to drop in during office hours for questions about the class or about other things, especially transportation-related (jobs, grad school, specializations, etc.).

Academic Integrity

Make sure to read the "*Code of Student Behaviors*" by Dr. T.G. Joseph & Mr. C. Harper (see below for summary), which is also available in Canvas.

"*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*".

Support Services/Mental Health

Did you know that the U of A has various low to no-cost services to help students succeed? Visit https://www.ualberta.ca/en/campus-life/health-wellness/mental-health/index.html for information about the academic, wellness, and various other support services available to students. It's never too early or too late to seek help! Please take care of yourself and your

mental health. Learning should be fun, not a burden. The Interfaith Chaplain's Association also provides faith and spiritual support. https://www.ualberta.ca/en/current-students/interfaith-chaplains/index.html

Accommodations

- If you need accommodations for this class, please review the procedures on this website. https://www.ualberta.ca/current-students/academic-success-centre/accessibility-resources/index.html.
- If you have religious obligations, please stop by for office hours to discuss the timing of assignments.
- If you need assistance in improving your writing, please see the following resources https://www.ualberta.ca/current-students/academic-resources/writing.html

Active Learning and Preparing for Class

One key goal of the class for you to gain a greater understanding of important transportation engineering and planning concepts, methods, and ideas. Your participation is important in the discussion in class. Please also ask questions!

Device Policy

- Mobile phone use is discouraged during class.
- Refrain from emailing, searching, or doing other work.
- Cameras should be on as much as possible.
- Please use the raise hand function to ask questions.
- ChatGPT and other AI-enabled language/writing software may not be used for this class for writing. **You may use these tools for coding only.**
- Laptops and tablets are for note-taking only. Any other usage may revoke this privilege for the class.

Course Schedule

#	Date	Topic	Assignment (Due)
1	9/2/2025	Syllabus, overview of the course, and ethics	
2	9/4/2025	Why Does Behaviour Matter? Part 1	
3	9/9/2025	Why Does Behaviour Matter? Part 2	
4	9/11/2025	Survey Design	Ethics Trainings
5	9/16/2025	Stated Preference Experiments	
6	9/18/2025	Survey Sampling	
7	9/23/2025	Fundamentals of Discrete Choice	Assignment 1
8	9/25/2025	Logit Models (Part 1)	
9	9/30/2025	**No Class** (Logit Models (Part 2))*	
10	10/2/2025	Specification and Evaluation	Project Proposal
11	10/7/2025	Python Overview	
12	10/9/2025	Multinomial Logit	
13	10/14/2025	Model Information	Assignment 2
14	10/16/2025	Forecasting	

15	10/21/2025	Mixed Logit and Ordered Logit	
16	10/23/2025	Latent Class Choice Models	Assignment 3
17	10/28/2025	Joint Models	
18	10/30/2025	Alternative Models and Rules	
19	11/4/2025	Big Data	Assignment 4
	11/6/2025	Midterm	
	11/11/2025	**No Class - Reading Week (Enjoy!)**	
	11/13/2025	**No Class - Reading Week (Enjoy!)**	
20	11/18/2025	Qualitative Analysis Part 1	
21	11/20/2025	Qualitative Analysis Part 2	
	11/25/2025	Application Talk 1	Assignment 5
	11/27/2025	Application Talk 2	
	12/2/2025	Group Project Day 1	Group Project
	12/4/2025	Group Project Day 2	Group Project

*National Day for Truth and Reconciliation Day. Lecture material will be posted online.

Grading Scale:

The following grading scale will be used to assign grades in this class.

Highest	Lowest	Letter
100.00 %	97.00 %	A+
96.99 %	93.00 %	A
92.99 %	90.00 %	A-
89.99 %	87.00 %	B+
86.99 %	83.00 %	B
82.99 %	80.00 %	B-
79.99 %	77.00 %	C+
76.99 %	73.00 %	C
72.99 %	70.00 %	C-
69.99 %	67.00 %	D+
66.99 %	60.00 %	D
59.99 %	0.00 %	F