

- Lectures:** Tuesday, Thursday 8–9:20 AM NREF 2-127
- Lab:** Thursdays 5-7:50 PM NREF 2-125 or 2-117 (see schedule for dates)
- Instructor:** Amy Kim, ICE 6-269, [amy.kim@ualberta.ca](mailto:amy.kim@ualberta.ca)  
Office Hours: Tuesday 12:30-2:00 PM, Thursday 9:30–10:30 AM, or by appointment
- TAs:** Kathy Hui, [kathy.hui@ualberta.ca](mailto:kathy.hui@ualberta.ca); May Ren, [kren4@ualberta.ca](mailto:kren4@ualberta.ca)  
Help Desk: Friday 10 am – 12 pm, NREF 2-022 (2<sup>nd</sup> fl. hallway, beside staircase)

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### Course Objectives:

1. Provide greater in-depth coverage of traffic operations and transportation planning concepts first introduced in CIV E 315.
2. Provide opportunities for students to work with commercial software and other analysis methods used in the transportation engineering industry.
3. Introduce major current issues and trends in urban transportation engineering and planning.

### Course Description:

Students are expected to acquire a more in-depth understanding of traffic operations and transportation planning concepts and methods. These include: traffic flow fundamentals and characteristics; operations of surface roadway networks and controls (intersections), freeways and related facilities; capacity analysis of various transportation facilities; travel demand analysis; data collection methods and data analysis.

### Textbook(s) & Reference Materials:

1. **[HCM]** Highway Capacity Manual 2010.  
At: U of A Libraries, through Knovel. Search “Highway Capacity Manual” and click the second result of the search. Free access, yay!!
2. **[CCGSI]** Canadian Capacity Guide for Signalized Intersections, 3rd Edition.  
At: <http://tac-atc.ca/sites/tac-atc.ca/files/site/doc/resources/report-capacityguide.pdf>
3. **[GH]** Traffic and Highway Engineering by Garber, N.J. and Hoel, L.A. 4<sup>th</sup> Edition, Cengage Learning.
4. **[MKW]** Principles of Highway Engineering and Traffic Analysis by Mannering, Kilareski, and Washburn. 4<sup>th</sup> Edition, Wiley.

The first two references are required, while the others are suggested. Readings from other sources may be given throughout the term. Hard copies of 1, 3, and 4 are also on reserve at Cameron Library.

### Class website:

Is on eClass. Assignments, lecture materials, labs, supplemental references, etc. will be posted here.

### Grading:

Assignments	15%	Midterm exam	25%
Labs	10%	Final exam	45%
Attendance & participation	5%		

**Exams:**

The midterm exam is scheduled for Thursday October 20, 8-9:20 AM. Materials you are allowed to bring in include: 1) single sided, 8.5"x11" cheat sheet, and 2) non-programmable calculator (not your phone).

Final exam will be held during the exam period, date TBA. Materials you are allowed to bring in include: 1) double sided, 8.5"x11" cheat sheet, and 2) non-programmable calculator (not your phone).

**Assignments:**

Must be submitted **IN THE DESIGNATED CLASS BOX** (NREF 2<sup>nd</sup> floor) on the date and time indicated. Please remember to write your name and ID on your submissions. Late submissions will be penalized 25% per working day.

**Lab Sessions:**

Lab sessions will be conducted on the dates shown in the schedule. Due to the size of the class this year, we will need to: 1. break into two lab groups (one in 2-125 and the other in 2-117), and 2. more instructions for Lab 2 will be given closer to the lab date as we do not have enough Synchro licenses to go around.

There are 4 labs in total. Lab 1 will require *supplemental field work* in groups, which will be described in the lab handout and during the lab session. Completed labs must be submitted on the date and time indicated on the handout, in the designated box on NREF 2<sup>nd</sup> floor. Late submissions will be penalized 25% per working day.

**Communication Suggestions:**

Please be professional in your communications. I will respond to emails within 1-2 business days; please include "CIVE 411" in your subject line. Also, I encourage you to drop in during office hours for help with the course materials, or whatever other questions you may have about transportation (jobs, grad school, specializations, etc.). Outside of office hours, if my door is open please knock; I may be available. However, I do prefer that you make appointments.

**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](http://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.

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

**Lecture & Lab Schedule (tentative)**

Week	Date	Topic	Recommended readings <sup>1 2</sup>	Labs & Assignments
1	09/01	Course introduction & overview		
2	09/06	Introduction to urban transportation engineering & planning	[GH] 11.1-4	
	09/08	Traffic flow fundamentals	[GH] 6.1-2	
3	09/13	Shockwaves	[GH] 6.3, 6.5	Assignment 1 due
	09/15	Shockwaves	""	
4	09/20	Shockwaves	""	
	09/22	Capacity and LOS concepts	<b>[HCM] 5, [CCGSI] 4.7</b>	
5	09/27	Interrupted flow facilities	[GH] 7.1, 8.1-3, 6.4	Assignment 2 due
	09/29	Signalized intersections	[GH] 8.3.5, 8.4, 10.1, 10.2.1 [CCGSI] 3.1-2, 5.2-3	<i>Saturation flow (1)</i>
6	10/04	Signalized intersection analysis	[GH] 10.2, <b>[CCGSI] 3.3-4</b>	
	10/06	Signalized intersection analysis/control	<b>[CCGSI] 3.3-4</b>	
7	10/11	Signalized intersection control	[GH] 8.4, <b>[CCGSI] 3.3-4</b>	Assignment 3 due
	10/13	Signalized intersection control	<b>[CCGSI] 3.3-4</b>	<i>Signal design (2)</i>
8	10/18	Midterm review / catch-up		
	10/20	MIDTERM EXAM		
9	10/25	Uninterrupted flow facilities	[GH] 9, 8.5, <b>[HCM] 10,11</b>	
	10/27	Uninterrupted flow facilities	<b>[HCM] 12,10</b>	
10	11/01	Travel demand analysis; 4-step model: trip generation (1)	[GH] 12.1-6	Assignment 4 due
	11/03	4-step model: trip distribution (2)	""	<i>Highway capacity analysis (3)</i>
11	11/08	<i>Reading week!</i>		
	11/10			
12	11/15	4-step model: mode choice (3)		
	11/17	4-step model: assignment (4)		
13	11/22	Urban transportation planning *		Assignment 5 due
	11/24	<i>Guest lecture (TBA) *</i>		<i>(TBA) Planning topic (4)</i>
14	11/29	Intercity transportation *		
	12/01	Intercity transportation *		
15	12/06	Review		Assignment 6 due

<sup>1</sup> All materials from the CCGSI and HCM are **required** readings.

<sup>2</sup> Any additional readings will be discussed in lectures.

\* Order of lectures is subject to change