Civil Engineering
CIVENG 3K03
Introduction to Transportation Engineering
Fall 2026

Instructor Information

Sean Nix
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Office Hours:
By Appointment

TA Information

Name: Hassan Hamad
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Name: Hossam El-Din Helal
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Office Hour: By Appointment

Name: Tanjeel Zaman
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Office Hour: By Appointment

Class Times

Lecture/Tutorials	Day/Time
Lecture	MoWe 8:30AM - 9:20AM
Tutorial Group 1	Fr 12:30PM - 2:20PM
Tutorial Group 2	Fr 12:30PM - 2:20PM

Class Format

In Person

Course Dates: 09/08/2026 - 12/10/2026
Units: 3.00
Course Delivery Mode: In Person
Course Description: An introduction to the fundamentals of transportation systems and the application of engineering and mathematical principles to analyze and solve transportation challenges. Topics include transportation system priorities, functional and contextual classifications, traffic flow theory, level of service, queuing theory, signalized and unsignalized intersection design, travel demand modeling, safety, and the socioeconomic and environmental evaluation of transportation projects. Two lectures, one tutorial (two hours); fall term
Prerequisite(s): Registration in Level III or above of any Engineering program

Important Links

- Mosaic
- Avenue to Learn
- Student Accessibility Services - Accommodations
- McMaster University Library
- eReserves
- Open Education Resources

Course Learning Outcomes

- By the end of this course, students will be able to synthesize knowledge and data to select and apply appropriate models, methods, and tools for solving basic transportation engineering problems and providing informed insights to decision-makers.
- By the end of this course, students will be able to review, reflect upon, justify, and critically assess existing transportation projects, considering limitations, assumptions, constraints, and gaps in associated plans or studies.
- By the end of this course, students will be able to demonstrate comprehension of both technical and non-technical instructions and questions related to transportation engineering.
- By the end of this course, students will be able to present technical and non-technical material related to transportation engineering.

Graduate Attributes

The Canadian Engineering Accreditation Board (CEAB) is a division of Engineers Canada and is responsible for accrediting undergraduate engineering programs across Canada. Accreditation by the CEAB ensures that the engineering programs meet a national standard of quality and cover essential educational requirements. Graduate Attributes are a set of qualities and skills that the CEAB expects engineering graduates to possess. These attributes are a benchmark for the learning outcomes of accredited engineering programs. This section lists the Graduate Attribute Indicators associated with the Learning Outcomes in this course.

- CEAB 3.2: Synthesizes the results of an investigation to reach valid conclusions (1st learning outcome).
- CEAB 4.4: Justifies and reflects on design decisions, giving consideration to limitations, assumptions, constraints and other relevant factors (2nd learning outcome).
- CEAB 7.1: Demonstrates comprehension of technical and non-technical instructions and questions (3rd learning outcome).
- CEAB 7.3 Composes and delivers an effective oral presentation for the intended audience (4th learning outcome).

Course Schedule

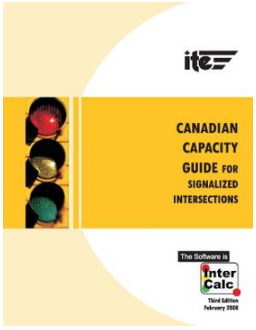
A weekly breakdown of the course schedule

Week	Topic	Assessment
1	Introduction	
2	Transportation System Priorities, Functional and Contextual Classifications	Assignment #1, Midterm #1, Final Exam
3	Traffic Flow Theory	Assignment #1, Midterm #1, Final Exam
4	Queuing Theory	Assignment #2, Midterm #1, Final Exam
5	Level of Service - Signalized Intersections	Assignment #3, Midterm #1, Final Exam
6	Safety	Midterm #1
Midterm Break		

Week	Topic	Assessment
7	Midterm #1 Level of Service - Unsignalized Intersections	Midterm #1, Term Project
8	Travel Demand Modeling - Trip Generation	Assignment #4, Midterm #2, Final Exam
9	Travel Demand Modeling - Trip Distribution	Assignment #4, Midterm #2, Final Exam
10	Travel Demand Modeling - Modal Split	Assignment #4, Midterm #2, Final Exam
11	Travel Demand Modeling - Trip Assignment Midterm #2	Assignment #4, Midterm #2, Final Exam
12	Term Project Presentations	Term Project
13	Term Project Presentations	Term Project
14	Term Project Presentations	Term Project

Required Materials and Texts

Please sign in with your MacID here to view your booklist

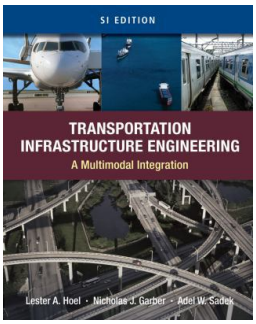


Canadian Capacity Guide (CCG) for Signalized Intersections
ISBN: 978-1-933452-24-1
Authors: Teply, S., Allingham, D.I., Richardson, D.B., Stephenson B.W.
Publisher: Institute of Transportation Engineers (ITE), District 7 - Canada
Publication Date: February 2008
Edition: 3rd

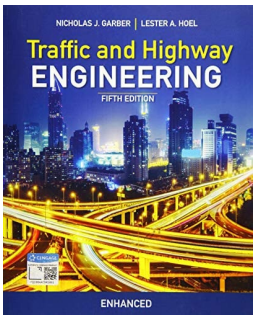
Available for download at https://www.itecanada.org/wpdm-package/canadian-capacity-guide/

Optional Course Materials

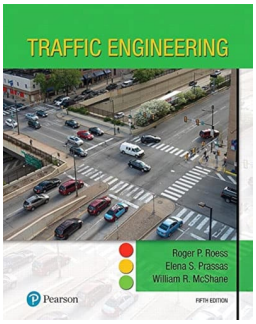
Please sign in with your MacID here to view your booklist



Transportation Infrastructure Engineering: A Multimodal Integration
ISBN: 978-0-495-66789-6
Authors: Hoel, L.A., Garber, N.J., Sadek, A.W.
Publisher: Cengage
Publication Date: Copyright 2011
Edition: SI Units



Traffic and Highway Engineering, Enhanced Edition
ISBN: 978-1-337-63102-0
Authors: Garber, N.J., Hoel, L.A.
Publisher: Cengage
Publication Date: December 17, 2018 (Copyright 2020)
Edition: 5th



Traffic Engineering
ISBN: 978-0134-59971-7
Authors: Roess, R.P., Prassas, E.S., McShane, W.R.
Publisher: Pearson
Publication Date: April 2, 2018 (Copyright 2019)
Edition: 5th



Geometric Design Guide for Canadian Roads
Authors: Transportation Association of Canada
Publication Date: June 14-16, 2017
Edition: 2017



Ontario Traffic Manual
Authors: Ministry of Transportation, Ontario

Available at https://otc.org/ontario-traffic-manuals/

Course Evaluation

Assessment Type	Weight
Assignments (x4)	16%
Midterm 1	12%
Midterm 2	12%

Assessment Type	Weight
Term Project	20%
Final Exam	40%

Undergraduate Grading Scale

The McMaster 12 Point Grading Scale

Grade	Equivalent Grade Point	Equivalent Percentages
A+	12	90-100
A	11	85-89
A-	10	80-84
B+	9	77-79
B	8	73-76
B-	7	70-72
C+	6	67-69
C	5	63-66
C-	4	60-62
D+	3	57-59
D	2	53-56
D-	1	50-52
F	0	0-49

Late Assignments

Late assignments will not be accepted, as the solutions will be posted on Avenue to Learn (A2L) shortly after the deadline.

Course Modification

The faculty member for this course reserves the right to change the dates and deadlines for any elements of the course. Changes will be communicated through regular communication channels, such as in-class announcements and notifications on A2L.

Generative AI: Some Use Permitted

Students may use generative artificial intelligence (AI) for editing, translating, outlining, brainstorming, and/or revising their work throughout the course so long as the use of generative AI is referenced and cited following citation instructions

given in the syllabus. Use of generative AI outside the stated use of editing, translating, outlining, brainstorming, and/or revising without citation will constitute academic dishonesty. It is the student's responsibility to be clear on the limitations for use and to be clear on the expectations for citation and reference and to do so appropriately.

APPROVED ADVISORY STATEMENTS

Academic Integrity

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy.

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

Authenticity / Plagiarism

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. Avenue to Learn, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked

for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. **All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

Courses with an On-line Element

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn, LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

Online Proctoring

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

Conduct Expectations

As a McMaster student, you have the right to experience, and the responsibility to

demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the Code of Student Rights & Responsibilities (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online.**

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

Academic Accommodation of Students with Disabilities

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

Requests for Relief for Missed Academic Term Work

In the event of an absence for medical or other reasons, students should review and follow the Policy on Requests for Relief for Missed Academic Term Work.

Academic Accommodation for Religious, Indigenous, or Spiritual Observances (RISO)

Students requiring academic accommodation based on religious, Indigenous or spiritual observances should follow the procedures set out in the RISO policy.

Students should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

Copyright and Recording

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

Extreme Circumstances

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, Avenue to Learn and/or McMaster email.