ENGINEERING
McMaster-Mohawk
Bachelor of Technology
Partnership

McMaster University

Course Outline

1. COURSE INFORMATION

Session Offered	Winter 2022	
Course Name	Legal and Regulatory Issues	
Course Code	GEN TECH 4EM3	
Date(s) and Time(s) of lectures	C01: Thursdays 6:30pm to 9:30pm (synchronous online delivery) Note: Due to covid-19 the course will be delivered via online lectures Microsoft Teams (primary) - links will be provided via course website on A2L Zoom (backup, if primary does not work) – link to be provided via A2L	
Program Name	One of the following: Civil Engineering Infrastructure Technology, Manufacturing Engineering Technology, Power and Energy Engineering Technology or Software Engineering Technology	
Calendar Description	This course is an introduction to the legal, ethical, and regulatory frameworks that professional engineers and related professions must observe in the Province of Ontario.	
Instructor(s)	Graham Nasby, P.Eng., PMP, CAP	E-Mail: nasbyg@mcmaster.ca Office Hours: 30min online following lectures

2. COURSE SPECIFICS

Course Description	This course provides an introduction to the legal, ethical, and regulatory frameworks, including associated regulations that professional engineers and related professions must work within in the Province of Ontario. The course has three applied assignments, midterm and final exam. To pass the course, students must pass both the assignments portion and cumulated passing grade on the midterm and final exam.		
Instruction Type	**Code**	**Type**	**Hours per term**
	C	Classroom instruction (Online Lectures)	36
	L	Laboratory, workshop or fieldwork	
	T	Tutorial	
	DE	Distance education	
		Total Hours	**36**

Resources	**ISBN**	**Textbook Title & Edition**	**Author & Publisher**
	Required Text Book ISBN10: 126013590X ISBN13: 9781260135909	Law for Professional Engineers, 5th Edition	D.L. Marston, © 2019 McGraw-Hill, 432 pages
	Alternate Text Book ISBN10: 0-07-098521-9 ISBN13: 978-0-07-098521	Law for Professional Engineers, 4th Edition	D.L. Marston, © 2018 McGraw-Hill, 400 pages
	Optional Text Book ISBN10: 0176764674 ISBN13: 978-0176764678	Canadian Professional Engineering and Geoscience: Practice and Ethics, 6th Edition	G. C. Andrews, © 2018 Nelson Education, 504 pages
	Alternate Optional Text Book ISBN10: 0-17-650990-9 ISBN13: 978-0-17-650990-	Canadian Professional Engineering and Geoscience: Practice and Ethics, 5th Edition	G. C. Andrews, © 2014 Nelson Education, 472 pages

	Other Supplies	**Source**
	Occupational Health & Safety Act RSO 1990 and related regulations	Available via e-Laws Ontario: Free download https://www.ontario.ca/laws
Prerequisite(s)	Registration in Civil Engineering Infrastructure Technology, Software Engineering Technology, Power & Energy Engineering Technology or Manufacturing Engineering Technology	
Corequisite(s)	None	
Antirequisite(s)	None	
Departmental Policies	• Students must maintain a GPA of 3.5/12 to continue in the program. • In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of "out-of-class" work for every scheduled hour in class. "Out-of-class" work includes reading, research, assignments and preparation for tests and examinations. • Where group work is indicated in the course outline, such collaborative work is mandatory. • **The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.** • Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class. • Instructor has the right to submit work to software to identify plagiarism.	
Course Specific Policies	It is expected that students read the material that is coming under discussion prior to class. Students are expected to actively participate during class sessions offering insight, comment, reinforcement, argument, contrary views and underscoring examples. **ONLINE QUIZES** There are two online quizzes for the course. **<u>Online Quiz 1: Health/Safety Regulations and Per-Start Health & Safety reviews</u>** • Available on Avenue to Learn during the week of Mon Jan 24 to Fri Jan 28 • Online multiple choice format. Time limit to complete once started. **<u>Online Quiz 2: Ethics and Environmental Regulations</u>** • Available on Avenue to Learn during the week of Mon Mar 28 to Fri Apr 1 • Online multiple choice format. Time limit to complete once started. **ASSIGNMENTS** There are three assignments in the course. **<u>Assignment 1: Legal Scenarios</u>** • Assignment available via Avenue to Learn during week of Jan 17-21 • Written report style submission in MS Word or PDF format. • Due Wednesday February 2 via Avenue to Learn	

	Assignment 2: Ethics Scenarios • Assignment available via Avenue to Learn during week of Feb 28-Mar4 • Written report style submission in MS Word or PDF format. • Due Wed March 16 via Avenue to Learn **Assignment 2: Construction Project Permitting Assignment** • Assignment available via Avenue to Learn during week of Mar 14-18 • Written report style submission in MS Word or PDF format • Due Friday April 1 via Avenue to Learn. **Late assignments will have a deduction of 10% per day up to three days from the due date. After three days from the due date, assignments will not be accepted.** **Marked assignments will be returned to students at the lecture that occurs 2 weeks after the assignment due date.** **MIDTERM & FINAL EXAM** Please note that there are no make-up or deferred midterm examinations in this course. If, for any reason, a student misses a midterm examination, the value of that examination will be applied to the cumulative final examination **(i.e. a missed midterm exam will result in the cumulative final examination being weighted at 70% of the final grade).** MSAF is not permissible for weights on evaluations (i.e. midterm, final exam) that are greater than or equal to 25%. **Any attempt to submit a falsified MSAF for this course for a missed midterm exam constitutes academic dishonesty and charges may be filed with the Office of Academic Integrity.** Final exam is **cumulative.** **To pass the course, students must pass both the assignments portion and achieve a cumulated passing grade on the midterm and final exam.**

3. COURSE SCHEDULE		
W01: Mon January 10	**Course Introduction** **Engineering Law #1** • Why Laws Exist • Canadian Legal System • Legal Entities – Persons & Corporations • Law of Torts • Limitations Act • Introduction to Contracts • Five Aspects of a Contract in Canada	READINGS: Lecture Notes READINGS: 4th Marston CH 1-7 READINGS: 5th Marston CH 1-7

W02: Mon Jan 17	**Guest Speaker** • Workplace Health and Safety • Pre-Start Health & Safety Reviews (PSR) **Health & Safety #1** • Protecting yourself as an Engineer • Ontario Regulations • Designing for Better Safety • Decision Making & Risk Assessment • Enforcement & Ministry of Labour • Ontario definition of "Constructor" • When something goes wrong….	READINGS: Lecture Notes READINGS: 4th Marston CH 28-31 READINGS: 5th Marston CH 28-31 FURTHER READINGS: Ontario Occupational Health and Safety Act O.Reg. 213 O.Reg. 851 O.Reg. 490 **Note: Tues Jan 18 is the last day to add or change classes.**
W03: Mon Jan 24	**Engineering Law #2** • Review of Contracts • Problems with Contracts • Purchasing Products and Services • Tendering and Contract A & B • Contract Interpretation • Discharge of Contracts • Breach & Fundamental Breach • Solving Contract Problems	READINGS: Lecture Notes READINGS: 4th Marston CH 8-20 READINGS: 5th Marston CH 8-20 **ASSIGN #1:** Legal Scenarios available on A2L during this week **ONLINE QUIZ #1: Health & Safety Regulations & PSRs available Mon Jan 24 to Fri Jan 28**
W04: Mon Jan 31	**Engineering Law #3** • How a Client Hires an Engineer • Concurrent Liability • Construction Contracts & Projects • Bonds and Performance Guarantees • Construction Lien Act • Construction Contract Administration • CA Workflows and Terms • Change Orders • Introduction to CCDC Contracts • Other Standard Form Contracts • Ont. Professional Engineers Act • Professional Responsibilities	READINGS: Lecture Notes READINGS: 4th Marston CH 21-27,30 READINGS: 5th Marston CH 21-27, 30 **ASSIGN #1: Legal Scenarios Due: Wed Feb 2 @ 11:59pm (A2L)**

W04: Mon Feb 7	**Engineering Law #4** • Why you don't want to go to court! • Arbitration and Mediation • How to Protect Yourself as an Engineer • Knowing when you need a lawyer • Professional Practice Insurance **Review for Midterm** • Take up Assignment 1 Sample Answers • Engineering Law Concepts Review	READINGS: Lecture Notes READINGS: 4th Marston CH 32 READINGS: 5th Marston CH 32 READINGS: 5th Andrews CH 1-5
W05: Mon Feb 14	**Online Midterm Exam 7:00-9:30pm** Focus on Engineering Law + Health & Safety	**Online midterm to be provided via A2L. Written instructions and link will be provided.**
W06: Mon Feb 21	*Family Day – No Class*	
W07: Mon Feb 28	**Ethics and Professional Conduct #1** • Legal Definition of an Engineer • Certificate of Authorization • Regulations and Self-Governance • Engineers vs. Architects vs. Others • Engineering Seal • Discipline and Enforcement • Professional Duties and Responsibilities • Engineer's Duty to Report • Consulting Engineers • Code of Conduct	READINGS: Lecture Notes READINGS: 4th Marston CH 32 READINGS: 5th Marston CH 32 READINGS: 5th Andrews CH 1-5, 9 **ASSIGN #2:** Ethics Scenarios available on A2L during this week
W09: Mon Mar 7	**Ethics and Professional Conduct #2** • Principles of Ethics and Justice • Ethical Theories • Employee Engineer • Consulting Engineer • Common Dilemmas in the Workplace • Client-Consultant Relationship • Professional Competence • Reviewing Work of Others • Conflict of Interest • Drawings and Seals • Environmental Ethics • Maintaining your License & Competency	READINGS: 5th Andrews CH 10-13 and Lecture Notes

W10: Mon Mar 14	**Engineering Professional Practice** • What Engineers Do • History of Engineering Licensing & Why • Licensing and path to licensure • Role of Engineer in Design Projects • Role of Engineer in Construction • Project Engineers vs. Design Engineers • Staff, Company & Employee Engineers • Private Practice and Engineer of Record	READINGS: Lecture Notes READINGS: 4th Marston CH 32 READINGS: 5th Marston CH 32 READINGS: 5th Andrews CH 1-5 **ASSIGN #2: Ethics Scenarios Due: Wed Mar 16 @ 11:59pm (A2L)** ***Note: Wed Mar 18 is the last day to drop the course without penalty – see McMaster Academic Calendar***
W11: Mon Mar 21	**Ethics & Professional Conduct Review** • Take up Assignment 2 Sample Answers • Review of Ethics & Conduct Concepts **Environmental Regulations** • Canadian Regulations • Ontario Regulations • Municipal Regulations • Permits, Assessments, and Reporting • Impact on Engineering Projects • How to Stay out of Trouble!	READINGS: 5th Andrews CH 13-15 and Lecture Notes **ASSIGN #3:** Construction Project Permitting Assignment available on A2L during this week
W12: Mon Mar 28	**Ontario Design Codes, Statutes & Reg's** • Regulations vs. Codes vs. Standards • Industry Consensus Standards & Codes • Technical Reports & RP documents • Government Regulations • Global vs. Federal vs. Provincial Codes • Building Code • Fire Code • Plumbing Code • Ontario Electrical Safety Code • ASME B31.1 • Other Codes & Standards • Technical Safety & Standards Authority • Electrical Safety Authority • Enforcement of Codes/Regulations • Technical Societies (Role of) • Standards Council of Canada (Role of) • Permits • Guidance for the Engineer	READINGS: Lecture Notes **ONLINE QUIZ #2: Ethics and Environmental regulations available Mon Mar 8 to Fri Apr 1** **ASSIGN #3: Construction Project Permitting Assignment Due: Fri Apr 1 @ 11:59pm (A2L)**

W13: Mon Apr 4	**Professional Practice Guidance** • Best Practices to avoid design mistakes • Learning from the mistakes of others… • Navigating Various Codes/Regulations • QA/QC for Engineering Design • QA/QC during Construction Projects • Common Problems in Construction • Review for writing the PPE Exam • Keeping your skills up to date **Course Review**	READINGS: Lecture Notes READINGS: 4th Marston CH 32 READINGS: 5th Marston CH 32 READINGS: 5th Andrews CH 1-5, 9
W14: Mon Apr 11	**No Class**	
Exact Date TBD (most likely Mon Apr 25)	**Online Final Exam 7:00-9:30pm** • Covers Entire Course	**Online exam to be provided via A2L. Written instructions and link will be provided.**

(The last full week of classes of the Winter 2022 is Mon Apr 4 to Fri Apr 8)

Classes end: Tuesday, April 12.
Final examination period: Thursday, April 14 to Friday, April 29
All examinations MUST be written during the scheduled examination period.

Note that this structure represents a plan and is subject to adjustment term by term.

The instructor and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes.

4. ASSESSMENT OF LEARNING **see above for dates**	Weight
Assignments (3 at 10% each)	30%
Online Quizzes (2 x 5% each)	10%
Mid-term Test (Engineering Law and Health and Safety) – Online Format	30%
Final examination (tests cumulative knowledge) – Online format	30%
TOTAL	**100%**

Percentage grades will be converted to letter grades and grade points per the University calendar.

5. LEARNING OUTCOMES

1. Demonstrates an understanding of the legal duties of engineering and design professionals, and the legal environment in which they operate.
2. Demonstrates an understanding of the code of conduct and ethical standards that apply to engineering and design professionals.

3. Comprehends how construction projects are typically structured and administered in order to manage the legal, liability and site risks associated with these projects for all involved parties.
4. Applies the Ontario Occupational Health and Safety Act to the engineering environment to ensure compliance on work.
5. Comprehends the purpose and intent behind Environmental Regulations, and how both the engineer and the worker can work safely while also protecting the environment.
6. Distinguishes the various codes, regulations and standards that engineering and design professionals must contend with for both operational and project-related work.
7. Recognizes the path to becoming a licensed engineer and the requirements to maintain an engineering license.

6. POLICIES

ANTI-DISCRIMINATION

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.
http://www.mcmaster.ca/policy/General/HR/Discrimination_Harassment_Sexual_Harassment-Prevention&Response.pdf

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 in 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, located at https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/

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 DETECTION

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. A2L, 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.

ONLINE PROCTORING

Some courses may use on-line elements (e.g., e-mail, Avenue to Learn (A2L), 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.

COMMUNICATIONS

It is the student's responsibility to:

- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.
- Check the McMaster/Avenue email and course websites on a regular basis during the term.

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

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "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. http://www.mcmaster.ca/policy/Students-AcademicStudies/Studentcode.pdf

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, A2L and/or McMaster email.