

**COURSE INFORMATION**

**Course Name:** Reinforced Concrete Design      **Course Code:** CIV ENG 3J04

**Session Offered:** Winter 2021

**Calendar Description:** Design by limit states methods to ensure adequate capacities for bending moment, shear and diagonal tension, axial force, bond and anchorage; and design to satisfy serviceability requirements for deflection and cracking; practical design requirements; interpretation of building code for behaviour of structures.

**Pre-Requisites:** Structural Analysis (3G04), Civil Engineering Materials & Design (3P04)

**Instructor:** Wael El-Dakhkhni, *Ph.D., P.Eng., P.E., F.ASCE* ([eldak@mcmaster.ca](mailto:eldak@mcmaster.ca)) JHE 303

**Teaching Assistants:** Yasser Elleathy ([elleathy@mcmaster.ca](mailto:elleathy@mcmaster.ca))  
Ahmed Badr ([badra2@mcmaster.ca](mailto:badra2@mcmaster.ca))  
Ahmed Moussa ([moussa1@mcmaster.ca](mailto:moussa1@mcmaster.ca))

**Lectures:** Mon, Wed, and Thurs 5:30-6:30 pm via Zoom (see instructions on A2L course website)

**Tutorials:** Section 1: Thurs 2:30-4:20 pm, Section 2: Fri 9:30-11:20 am via Zoom (see instructions on A2L course website)

**Laboratory:** Section 1: Wed 11:30 am - 2:20 pm, Section 2: Fri 2:30- 5:20 pm,  
Section 3: Mon 11:30 am - 2:20 pm via Zoom (see instructions on A2L course website)

***Lectures and tutorials will be recorded and posted on the password-secured course website. You are under no obligation to appear or speak in the recording. If you choose to participate in an identifiable way, you are consenting to the recording being used as noted above.***

**Website:** On Avenue to Learn (<http://avenue.mcmaster.ca>). Please sign up immediately because important information and course documents will be posted there. It is your responsibility to check the course website regularly.

**TA Office Hours:** Mondays and Tuesdays 12:30-1:30 pm via Zoom (see instructions on course website)– Monday is best for questions regarding marked assignments and Tuesday is best for questions regarding upcoming assignments due.

**Instructor Office Hours:** Wednesday 2:30-3:30 pm via Zoom (see instructions on course website)–This is a backup for general questions related to course concepts that could not be adequately addressed during lectures or tutorials. This time shall not be used to repeat missed information during the tutorial or lectures.

**Books:**

**Required:** CAC, "Concrete Design Handbook", Canadian Portland Cement Association", 4<sup>th</sup> Edition, Ottawa, ON, 2016 (This contains A23.3-14, Design of Concrete Structures. **The CSA A23.3-14 and -19 can also be accessed through the McMaster library website**). <https://www.cement.ca/technical-publications/> . The Handbook can also be purchased through the bookstore (in-process). **In all cases, a hard copy of the CSA A23.3-14 or -19 is a must for the class.**

**Recommended:** Omar Chaallal "Reinforced Concrete Structures, Design According to CSA A23.3-14" Pearson Education Canada Inc., 2<sup>nd</sup> edition, 2018. ISBN 978-2-7605-4997-5.  
<https://www.puq.ca/catalogue/livres/reinforced-concrete-structures-2nd-edition-3637.html>

## 1. COURSE OBJECTIVES

Please refer to Section 5 for the Learning Outcomes of this course. The course will first focus on reviewing some key aspects pertaining to structural analysis and material behavior; explaining key building system behavior and limit state design concepts; and outlining loading provisions of the National Building Code of Canada (NBC 2015). Following this introduction, the primary objective of this course is to empower students with the foundation to: a) understand the behavior of key reinforced concrete structural components (beams and one-way slabs, columns, beam-columns); and b) successfully analyze and design such reinforced concrete components, satisfying strength and serviceability limit states in accordance with CSA-A23.3 "Design of Concrete Structures".

## 2. COURSE SPECIFIC POLICIES

**Background:** There is a lack of mechanics-focused and recent-standards-conforming (e.g., CSA A23.3-19) textbooks in Canada. As such, the instructor and the lead TA (Mr. Yasser Elleathy) have been spending the last six months developing highly visual course notes and lectures specifically to you. A course mobile app to help you review course materials is also being finalized and the details of which will be provided in due time.

The course instructor is a registered professional engineer in Canada and USA with more than 25 years of reinforced concrete design and site supervision experience. The TAs have in-depth understanding of structural analysis and mechanics and hands-on experience in reinforced concrete design. The instructor's and the TAs' professional experience is key to ensure real-life relevance to the course and is a valuable resource.

Great effort has been undertaken to make your learning experience during this course not only technically interesting, but also exciting, inspiring and enjoyable. If after you have attended the lectures and tutorials and studied the course notes, you still have questions, please reach out and we will do our best to help. Design courses, such as 3J04, highly depend on the practical experience of the educators. Our goal is to provide you with in-depth knowledge of reinforced concrete design to become competent design professionals and a fellow practicing engineer in the near future.

To facilitate such experience transfer, please ensure adherence to the [Code of Student Rights & Responsibilities](#) during online lectures, tutorials, and office hours, similar to what is expected during physical ones. For example:

- **Speak (write) with respect.** Do not say or write something online that would be inappropriate to say in person.
- **Show with respect.** If you choose to turn on your video or share your screen, ensure that the video does not show anything that would be inappropriate to show in person. Dress in a way that would be acceptable for an in-person class, and do not show anything (e.g., your background) that would be considered offensive.
- **Be prepared to work.** Check the course website before coming and expect to participate actively in every class, including having a calculator with you.
- **Participate in class** like you would in person. Do not try to multi-task. If you disrupt the class, the instructor/TA will remove you from the session without warning. Violations to the [Code of Student Rights & Responsibilities](#) will be reported to Student Support and Case Management Office for investigation.

If you are bothered by the behaviour of other students, please let the instructor know to address your concerns.

## **Virtual Synchronous Lectures**

This course will use Zoom.us as the sole Virtual platform for all teaching activities, including lectures, tutorials, progress meetings, and office hours. Please note that:

- Please create a McMaster Zoom account (free) – <https://mcmaster.zoom.us>
- Login to all 3J04 Zoom meetings using your [@mcmaster.ca](mailto:@mcmaster.ca) e-mail. Only students logging in using their McMaster Zoom accounts will be allowed in class.
- Zoom invitations and passwords for lectures, tutorials, and office hours are posted on A2L.
- All events (except office hours) will be recorded and posted on A2L with close captions.
- The meeting hosts (Course instructor & TA's) have access to the chat transcript for all messages during the meetings. Therefore, please **avoid sending any personal information through the Zoom chat function**.
- Students will be muted during the lecture unless they have questions.
- Students are not required to turn on their webcams to reduce data traffic.

## **Communication, Discussion, and Feedback**

All formal communications regarding this course will be through McMaster's e-mail account and/or A2L. Please be sure to check your McMaster email account regularly. If you have not received e-mails regarding 3J04, it is your responsibility to contact the department with your McMaster e-mail address and ensure your name is on the distribution list. Similar information will be posted on Avenue to Learn.

E-mail subject line must start with the course number (otherwise, your e-mail will be filtered out) followed by a colon and includes a relevant description of the content in the e-mail (e.g., 3J04: Assignment 2 question).

Following this policy, students may expect a response from the TA's within two business days, or from the instructor in three business days. E-mails that do not follow this policy may not receive a response.

You are encouraged to discuss the feedback that you receive on your assignments with the course TA's and the course instructor. If you believe that you have received incorrect grades, you must contact the teaching team immediately with an e-mail explanation. This process should be no later than one week of the day that the assignment was returned.

**Lectures and Tutorials:** The lectures will present theoretical/design background and some illustrative examples. The tutorials will be used to demonstrate additional examples, provide assistance with problem solving, and for special presentations. In certain situations, the tutorial and laboratory sessions may also be used to give a lecture and vice versa; you will be notified in advance if this will occur. It is your responsibility to check the CIV ENG 3J04 course website (<http://avenue.mcmaster.ca>) on a regular basis.

**Assignments:** All assignments are to be submitted to the 3J04 course website as one file for each submission and the latest file will be considered for grading (<http://avenue.mcmaster.ca>). The purpose of the assignment problems is to give you an opportunity to develop an in-depth understanding of the course material. While discussion with other students of the background and approach to solution of problems is often beneficial, you need to ensure that you solve each problem on your own (i.e., the way it will be during the tests and final exam). You are strongly encouraged to solve the problems in the practice problems sets prior to the tutorial time. Problems similar to, but necessary the same as, that in the assignments will be discussed during the tutorial time. All work that you submit for grading must be your own work. Assistance on working out these problems will be available during the tutorial sessions. Although the course includes assignments, you are strongly encouraged to solve additional problems available in the Concrete Design Handbook and the recommended textbook (if you decided to use it).

**Assignment Submissions:** Unless the instructor has specifically allowed the late submission of a particular assignment for a particular or all students, late submissions will be handled according to the following guidelines: From 0-24 hrs late – 25% Penalty; From 24-48 hrs late – 50% Penalty; and No submission allowed after 48 hrs.

## **Laboratory Report and Safety:**

- *Each student must prepare their own laboratory report based on their lab assignment.*
- *Detailed instructions about these lab sessions, assignments and report requirements will be posted on the course website.*

*While we will not be able to have in-person laboratory demonstration this year because of the response to the COVID pandemic, it is still important to know:*

The Faculty of Engineering is committed to McMaster University's Workplace and Environmental Health and Safety Policy which states: "Students are required by University policy to comply with all University health, safety and environmental programs and policies". It is your responsibility to understand McMaster University Workplace and Environmental Health and Safety programs and policies. For information on these programs and policies please refer to McMaster University Environmental and Health Support Services Occupational Safety Risk Management Manual at: <https://hr.mcmaster.ca/app/uploads/2019/07/2019-McMaster-Lab-Manual.pdf>

It is also your responsibility to follow any specific Standard Operating Procedures (SOPs) provided for some of the experiments and the laboratory equipment. McMaster University's workplace health and safety guidance during COVID-19 should always be followed. The details and updates of this guidance can be found at <https://hr.mcmaster.ca/resources/covid19/workplace-health-and-safety-guidance-during-covid-19/> .

To ensure laboratory safety this term in accordance with McMaster University policy related to COVID-19, all labs will be held virtually. Under normal circumstances, the safety requirements for all Civil Engineering laboratories are listed below. Students who do not comply with health and safety requirements will not be allowed to participate in the lab.

- Glasses or safety glasses/goggles must be worn in the lab at all times
- Contact lenses are not to be worn in the lab.
- No short (i.e., above the knee) pants or skirts are permitted in the lab – lab coats must be worn over top of your clothing in these instances.
- Closed-toe shoes must be worn at all times.
- No loose clothing allowed.
- Long hair must be tied back.
- Gloves must be worn when working with hazardous chemicals (as indicated by the laboratory instructor).

In addition, the following instructions have been provided specifically for this course by the Applied Dynamics Laboratory manager, Kent Wheeler:

- PPE Required: During the lab, students are required to wear Green Patch safety boots, hard hats, and safety eye-glasses at all times. Students supply their own safety boots. Hard hats and safety-glasses are available in the lab. Prescription eye-glasses are only considered as safety glasses if they have side shields.
- Maintain a safe distance from the universal tester while the sample is being loaded.
- No one will create a situation that could compromise or jeopardize the safety of themselves or anyone else in the lab. Obey all instructions given to you by the Teaching Assistant and/or lab technical staff.
- These safety requirements are emphasized (1) through a pre-lab form which each student must sign, (2) through lab work instruction sheets, and (3) instructor/TA/technicians check each student to ensure they are wearing the above items.
- Prior to each lab, students are verbally reminded that they should wear the above safety equipment at all times, and in addition lab specific safety instructions are given to students by the instructor/TA/technicians.
- Failure to comply with safety rules, will result in the individual student being denied access to the lab and given a "did not complete" grade for the lab session.

During the COVID pandemic, the Standard Operating Procedures for the Applied Dynamics Laboratory are available at: [https://www.eng.mcmaster.ca/civil/sites/default/files/adl\\_lab\\_covid-19\\_sop.pdf](https://www.eng.mcmaster.ca/civil/sites/default/files/adl_lab_covid-19_sop.pdf) .

### 3. SCHEDULE

Week	Lectures	Tutorial and Assessments
Week 1, January 11 <sup>th</sup>	<b>Introduction</b> to Design Process, Codes, Standards & Specifications, Loads on Buildings, Load Path, Materials, and Limits States Design.	Statics Review Assignment 1
Week 2, January 18 <sup>th</sup>	Beam under Flexure. Introduction to Beam <b>Flexural Behaviour</b> , Analysis & Design. Singly Reinforced Rectangular <b>Beams Analysis</b> .	Rectangular Beam Flexural Analysis
Week 3, January 25 <sup>th</sup>	Beam under Flexure. Singly and Doubly Reinforced Rectangular <b>Beams Analysis</b> .	Rectangular Beam Flexural Analysis Assignment 2
Week 4, February 1 <sup>st</sup>	Beam under Flexure. <b>Flanged-Sections</b> Analysis.	Flanged Beam Flexural Analysis
Week 5, February 8 <sup>th</sup>	Beam under Flexure. <b>Design</b> Logic and Process.	Beam Flexural Design Assignment 3
Week 6, February 15 <sup>th</sup>	<b>Mid-Term Recess. No Classes.</b>	
Week 7, February 22 <sup>nd</sup>	Beam <b>Shear</b> Behaviour, Analysis and Design.	Beam Shear Design Assignment 4
Week 8, March 1 <sup>st</sup>	Axial and Flexural Load Resistance of Short Columns. Column Behaviour and <b>Interaction Diagrams</b>	Column Analysis <b>Mid-term Test</b>
Week 9, March 8 <sup>th</sup>	Axial and Flexural Load Resistance of Short Columns. Column Behaviour and Interaction Diagrams; <b>Biaxial Bending</b> .	Column Analysis Assignment 5
Week 10, March 15 <sup>th</sup>	Axial and Flexural Load Resistance of <b>Slender Columns</b> .	Slenderness Effects
Week 11, March 22 <sup>nd</sup>	<b>Serviceability</b> : Deflection and Crack Width Calculation, Limits and Control.	Serviceability Assignment 6
Week 12, March 29 <sup>th</sup>	<b>Bond</b> and Anchorage of Reinforcement: Development Length, Hooks for Flexural R/F, Stirrups and Ties, Bar Cut-Off, Code Requirements.	Bond and Anchorage
Week 13, April 5 <sup>th</sup>	The Art & Science of Reinforcement <b>Detailing</b>	Review
Week 14, April 12 <sup>th</sup>	<b>Review</b>	Review
Final Examination From April 15 <sup>th</sup> to 30 <sup>th</sup>	2 ½ hours Scheduled During the Regular University Final Examination Period Established by The Registrar's Office	

4. ASSESSMENT OF LEARNING	WEIGHT %
Assignments	25% (and up to 30%*)
Laboratory report	10%
Mid-Term Test	15% (and up to 30%**)
Final Exam	50%

**Notes**

1. **You must obtain at least 50% of the final exam mark (25/50), for the assignment marks to be considered in your final course grade. Failure to achieve at least 50% of the final exam grade will nullify your assignment grade (i.e., it will be considered 0/25).**
2. There will be six assignment during the class. \*Your lowest assignment grade will be omitted when calculating your total grade for assignments.
3. The instructor might offer a \*\*make-up mid-term test for the entire class.
4. The final percentage grade will be converted to a letter grade using the Registrar's scale shown in the McMaster Undergraduate Calendar.

**5. LEARNING OUTCOMES**

**When you have successfully completed this course, you will be able to:**

- identify key elements of reinforced concrete structures, such as beams, columns, and slabs [CEAB Indicator 1.4]
- calculate the forces in these members using fundamental principles of engineering statics, including strategies for calculating reactions and internal straining actions and for drawing shear force and bending moment diagrams [CEAB Indicator 1.3]
- describe the limit states of these elements and their connections using words, sketches, and calculations [CEAB Indicators 1.4 and 7.1]
- navigate the Concrete Design Handbook [CEAB Indicator 1.4]
- apply this fundamental and specialized engineering knowledge to solve unfamiliar problems in reinforced concrete design [CEAB Indicators 3.2, and 4.3]
- design reinforced concrete components using the current Canadian concrete design specification, CSA A23.3-14, to resist the loading conditions specified by the current National Building Code of Canada, NBC 2015 [CEAB Indicators 1.4, 2.3, and 4.6]
- identify possible failure modes and assumptions required to design these components and the limitations of the equations that are used for analysis and design and be able to provide feasible design solutions to prevent such failure modes [CEAB Indicators 2.1, 2.3 and 4.2]
- be able to recognize the failure modes associated with r/f concrete columns and beam-columns and establish corresponding capacities. Be able to establish design solutions for combined loads. [CEAB Indicator 3.3]
- be able to describe major steps in design process, establish loads, understand uncertainties, and be able to establish design solutions. [CEAB Indicators 3.3 and 4.1]
- understand the role of professional engineers in society, and protection of public safety [CEAB Indicator 8.1]

**If you achieve these objectives, you will be able to contribute meaningfully to the work that structural engineers do, whether in a design office or in academia.**

**Graduate Attributes and CEAB Indicators**

Through this course, you will develop in the following graduate attributes and indicators:

1. A knowledge base for engineering (Demonstrated competence in university level mathematics, natural sciences, engineering fundamentals, and specialized engineering knowledge appropriate to the program.)
  - 1.3 Competence in Engineering Fundamentals
  - 1.4 Competence in Specialized Engineering knowledge
2. Problem analysis (An ability to use appropriate knowledge and skills to identify, formulate, analyze, and solve complex engineering problems in order to reach substantiated conclusions.)
  - 2.1 Demonstrates an ability to identify reasonable assumptions (including identification of uncertainties and imprecise information) that could or should be made before a solution path is proposed.
  - 2.3 Obtains substantiated conclusions as a result of a problem solution including recognizing the limitations of the solutions.**
3. Investigation (An ability to conduct investigations of complex problems by methods that include appropriate experiments, analysis and interpretation of data, and synthesis of information in order to reach valid conclusions.)
  - 3.1 Ability to recognize and discuss applicable theory knowledge base.
  - 3.2 Selects appropriate model and methods and identifies assumptions and constraints.
  - 3.3 Estimate outcomes, uncertainties and determine appropriate data to collect.**
4. Design (An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, and economic, environmental, cultural and societal considerations.)
  - 4.1 Recognizes and follows an engineering design process.
  - 4.2 Recognizes and follows engineering design principles.**
  - 4.3 Obtains experience with open-ended problems.**
  - 4.5 Able to determine and include appropriate health and safety considerations.
  - 4.6 Determines and employs applicable standards and codes of practice.**
6. Individual and teamwork (An ability to work effectively as a member and leader in teams, preferably in a multi-disciplinary setting)
  - 6.1 Ability to manage time and processes effectively, prioritizing competing demands to achieve personal and team goals and objectives.
  - 6.3 Able to work in a group, taking a leadership role as appropriate and relinquishing the leadership role as appropriate.
7. Communication (An ability to communicate complex engineering concepts within the profession and with society at large. Such ability includes reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions.)
  - 7.1 Demonstrates an ability to respond to technical and non-technical instructions and questions.
  - 7.2 Presents instructions and information clearly and concisely.
8. Professionalism (An understanding of the roles and responsibilities of the professional engineer in society, especially the primary role of protection of the public and the public interest.)
  - 8.1 Understands the role of the engineer in society, especially in protection of the public and public interest.**
  - 8.2 Understands legal requirements governing engineering activities (including but not limited to personnel, health, safety, and risk issues).
11. Economics (An ability to appropriately incorporate economics and business practices including project, risk, and change management into the practice of engineering and to understand their limitations.)
  - 11.2 Can plan and effectively manage time, resources, and scope.

## 6. 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.

## 7. POLICIES

### 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](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), 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](http://www.mcmaster.ca/academicintegrity).

### **COURSES WITH AN ON-LINE ELEMENT**

**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.

### **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](mailto:sas@mcmaster.ca) to make arrangements with a Program Coordinator. For further information, consult McMaster'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". The McMaster Student Absence Form is a self-reporting tool for **Undergraduate Students** to report absences that last up to 5 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period. You may submit a maximum of 1 Academic Work Missed requests per term. It is **your** responsibility to follow up with your Instructor immediately regarding the nature of the accommodation. If you are absent more than 5 days or exceed 1 request per term you **must** visit your Associate Dean's Office (Faculty Office). You may be required to provide supporting documentation. This form should be filled out immediately when you are about to return to class after your absence.

### **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.

### **PROTECTION OF PRIVACY ACT (FIPPA)**

The Freedom of Information and Protection of Privacy Act (FIPPA) applies to universities. Instructors should take care to protect student names, student numbers, grades, and all other personal information at all times. For example, the submission and return of assignments and the posting of grades must be done in a manner that ensures confidentiality – see <http://www.mcmaster.ca/univsec/fippa/fippa.cfm>.

### **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. <https://secretariat.mcmaster.ca/app/uploads/Discrimination-and-Harassment-Policy.pdf>

### **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.

## **8. MCMASTER GRADING SCALE**

<b>Grade</b>	<b>Equivalent Grade Point</b>	<b>Equivalent Percentages</b>
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