

Course Outline

1. COURSE INFORMATION

Session offered	Winter 2017	
Course Name	Reinforced Concrete and Masonry Design	
Course Code	CIV TECH 3RC3	
Date(s) and Time(s) of lectures	Thursdays, 6:30pm–9:30pm, Jan 4–April 7, 2017	
Program Name	Civil Engineering Infrastructure Technology	
Calendar Description	Design by limit states methods to ensure adequate capacities for bending moment, shear and diagonal tension, axial force; and design to satisfy serviceability requirements.	
Instructor	Dr. A.G. Razaqpur, P.Eng. Professor of Civil Engineering, McMaster University	E-mail: razaqpu@mcmaster.ca Office Hours & Location: Tuesday 4:30pm-5:30pm (JHE 230)

2. COURSE SPECIFICS

Course Description	This course covers materials which would enable students to understand the behavior of structural reinforced concrete and masonry members, and to successfully design simple reinforced concrete and masonry structures in accordance with CAN/CSA-A23.3-14 “Design of Concrete Structures” and CAN/CSA-S304-14 “Design of Masonry Structures”.		
Instruction Type	Code	Type	Total Hours
	C	Classroom Instruction	36
	L	Laboratory, workshop or fieldwork	Workshop/Review
	T	Tutorial	
	DE	Distance Education	
	TOTAL HOURS		39
Resources	ISBN	Textbook Title & Edition	Author & Publisher
	978-2-7605-2543-6	Reinforced Concrete Structures , 2010 Edition <i>(purchase from bookstore)</i>	O. Chaallal and M. Lachemi, Presses de l’universite du Quebec
	0-9737209-0-5	Masonry Structures Behaviour and Design – Canadian Edition <i>(provided free of charge by CMDC)</i>	R.G. Drysdale and A.A. Hamid, Canada Masonry Design Centre (CMDC)
	Other Required Book	Concrete Design Handbook – 4th Edition <i>(purchase on line)</i> http://www.orderline.com/concrete-design-handbook-fourth-edition	
Prerequisite(s)	Mathematics (ENG TECH 3MA3), Strength of Materials (ENG TECH 3ML3)		
Corequisite(s)			
Antirequisite(s)			
Course Specific Policies	It is important that students read all reference material. Also, not all of the information will be handed out or written on the board. Students are expected to be able to take notes during lectures.		

Departmental Policies	<p>Students must maintain a GPA of 3.5/12 to continue in the program.</p> <p>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.</p> <p>Where group work is indicated in the course outline, such collaborative work is mandatory.</p> <p>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.</p> <p>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.</p> <p>Instructor has the right to submit work to software to identify plagiarism.</p>	
Term Week	Topic	Textbook Chapter
Week 1	Reinforced Concrete (RC) materials, design loads and limit states design philosophy.	1 & 2
Week 2	Analysis of RC beams under flexure [Part-1].	3
Week 3	Analysis of RC beams under flexure: service ability limit state [Part-2].	4
Week 4	Design of RC beams and one-way slabs .	4
Week 5	RC beams and slabs subjected to shear	5
Week 6	Bond, development length and splices	7
Week 7	Behaviour and design of RC short columns	11
Mid-term recess (Week of February 20-26)		
Week 8	Mid-term Examination, March 1 (2 hrs, 7:00-9:00 p.m.)	
Week 9	Behaviour and design of RC short columns	11
Week 10	Masonry materials and behaviour of masonry assemblages. Reinforced masonry (RM) beams and lintels.	
Week 11	Unreinforced masonry (URM) walls under axial load and out-of-plane bending.	
Week 12	RM walls under axial load and out-of-plane bending.	
Week 13	Review of Course Material for Final Examination	
Classes end – Friday, April 7, 2017 Final examination period: Tuesday, April 11 ,2017 to Thursday, April 27 ,2017 All examinations MUST BE written during the scheduled examination period.		
3. ASSESSMENT OF LEARNING *including dates*		Weight
Assignments/Quizzes		15%
Midterm Exam (Wednesday, March 1)		35%
Final Exam		50%
TOTAL		100%
Percentage grades will be converted to letter grades and grade points per the University calendar.		

5. LEARNING OUTCOMES

1. General understanding of limit state design philosophy
2. Fundamental knowledge of materials used in reinforced concrete and masonry construction
3. Understanding of the mechanics governing the behaviour of RC, URM, and RM elements
4. General understanding of Canadian Standards pertaining to RC and masonry construction
5. Specific knowledge of CSA Standards A23.3-14 and S304.1-14 and ability to translate the Standards' recommendations into effective design practice
6. Ability to design simple RC, URM, and RM elements (beams, columns, walls) in accordance with modern standards

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 required to exhibit honestly and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

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.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, located at: <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf>.

The following illustrates only three forms of academic dishonesty:

1. Plagiarism. E.g. the submission of work that is not own or for which other credit has been obtained
2. Improper collaboration in group work

Copying or using unauthorized aids in tests and examinations.

Requests for Relief for Missed Academic Term Work (Assignments, Mid-Terms, etc.)

The McMaster Student Absence Form is a self-reporting tool for **Undergraduate Students** to report absences **DUE TO MINOR MEDICAL SITUATIONS** that last up to 3 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any 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 (**NORMALLY WITHIN TWO WORKING DAYS**) regarding the nature of the accommodation.

If you are absent **for reasons other than medical reasons**, for more than 3 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.

<http://www.mcmaster.ca/msaf/>

E-Learning Policy

Consistent with the Bachelor of Technology's policy to utilize e-learning as a complement to traditional classroom instruction, students are expected to obtain appropriate passwords and accounts to access Avenue To Learn for this course. Materials may be posted for student download. It is expected that students will avail themselves of these materials prior to class. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user

names for the McMaster e-mail account, and program affiliation may become apparent to all other students in the course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about this disclosure please discuss this with the course instructor. Avenue can be accessed via <http://avenue.mcmaster.ca>.

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.

Turnitin (Optional)

This course will be using a web-based service (Turnitin.com) to reveal plagiarism. Students submit their assignment/work electronically to Turnitin.com where it is checked against the internet, published works and Turnitin's database for similar or identical work. If Turnitin finds similar or identical work that has not been properly cited, a report is sent to the instructor showing the student's work and the original source. The instructor reviews what Turnitin has found and then determines if he/she thinks there is a problem with the work. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to

<http://www.mcmaster.ca/academicintegrity/turnitin/students/>

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 posting of grades must be done in a manner that ensures confidentiality.

<http://www.mcmaster.ca/univsec/fippa/fippa.cfm>

Academic Accommodation of Students with Disabilities Policy

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information consult McMaster's policy for Academic Accommodation of Students with Disabilities

<http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

Students must forward a copy of the SAS accommodation to the instructor of each course and to the Program Administrator of the B.Tech. Program immediately upon receipt. If a student with a disability chooses NOT to take advantage of a SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. <http://sas.mcmaster.ca>

Student Code of Conduct

The Student Code of Conduct (SCC) exists to promote the safety and security of all the students in the McMaster community and to encourage respect for others, their property and the laws of the land. McMaster University is a community which values mutual respect for the rights, responsibilities, dignity and well-being of others. The purpose of the Student Code of Conduct is to outline accepted standards of behavior that are harmonious with the goals and the well-being of the University community, and to define

the procedures to be followed when students fail to meet the accepted standards of behavior. All students have the responsibility to familiarize themselves with the University regulations and the conduct expected of them while studying at McMaster University.

<http://judicialaffairs.mcmaster.ca/pdf/SCC.pdf> and <http://www.mcmaster.ca/policy/Students-AcademicStudies/StudentCode.pdf>