COURSE OUTLINE

COURSE INFORMATION

Course Name: Municipal Hydraulics Course Code: CIVENG 3M03

Session Offered: Winter 2024

Calendar Description: Analysis/design of water distribution networks; analysis and design of wastewater collection systems; pumps; surface and groundwater supplies.

Instructor: Sonia Hassini Phone: x 24914

Email: hassins@mcmaster.ca

Class Schedule Day(s): Lectures: Tuesdays 12:30 - 2:20 PM

Tutorials – Section 1: Wednesdays 4:30 - 6:20 PM

Tutorials – Section 2: Thursdays 12:30 - 2:20 PM

Teaching Assistants: Ahmed Okasha, Email: okasha1@mcmaster.ca

Ahmed Fathi Abdelaal, Email: abdela96@mcmaster.ca

Textbook (recommended): Water Supply and Pollution Control (8th Edition) by Warren Viessman Jr.; Mark J. Hammer; Elizabeth M. Perez; Paul A. Chadik **OR** CIVENG 3M03 custom courseware.

4. COURSE OBJECTIVES

Upon completing this course, the student will be able to

1) understand the functions and the hydrologic/hydraulic design requirements of the components of municipal water supply and distribution systems.
2) To understand the functions and the hydrologic/hydraulic design requirements of the components of sanitary and stormwater collection systems.
3) To perform hydraulic design of new or analyze hydraulically existing water transmission pipes, water distribution networks and pumping stations.
4) To perform hydraulic design of new or analyze hydraulically existing sanitary and storm sewer pipes and networks.
5) To perform basic water supply analysis with surface reservoirs and wells.

2. COURSE SPECIFIC POLICIES

1) The major form of communication in this course will be the Avenue to Learn (A2L) site. The course notes, assignments, and the project will be posted on A2L over the term. The course schedule may change slightly throughout the term, and any changes will be announced in class and reflected on A2L.
2) This course will be delivered in person; attendance is expected for lectures and tutorials.
3) Course notes will be posted on avenue-to-learn over the duration of the term. Posted notes are not intended to replace the lectures. Students are expected to attend and actively participate in the lectures. Tutorials will be used to practice key concepts presented in the lectures and deliver additional relevant materials to solidify class material.

4) Announcements made in class or posted on Avenue are considered to have been communicated to all students, including those who did not attend.
5) Assignments and project reports should be submitted online through Avenue to Learn. Late assignments and project reports will not be accepted. The deadline for a missed assignment with a granted relief will be extended by three days.
6) The weight of a missed midterm test with a granted relief (MSAF; see section 7 for further details) will be transferred to the final exam.
7) It is the responsibility of students to check, within one week of posting, their marked work and ensure that marks entered on the course website are correct.

3. SCHEDULE

WEEK 1	Introduction & Water Demand Analysis	
WEEK 2	Water Transmission - Continuity and Energy Equations, Gravity and Pressure Systems, Steady Uniform Flow, Friction Head Losses and Local Head Losses	Assignment 1
WEEK 3	Water Distribution Systems	Assignment 1
WEEK 4	Water Distribution Network	Assignment 1
WEEK 5	Water Distribution Network Analysis	Assignment 2
WEEK 6	Distribution Storage, Pumps and Pumping	Water Distribution System Design Project
WEEK 7	Pumps and Pumping, Sewerage and Drainage Systems	Assignment 2 & Design Project
WEEK 8	Wastewater Quantities, Hydraulics of Sanitary Sewer Systems	Assignment 2 & Design Project
WEEK 9	Hydraulics of Sanitary Sewer Systems, Design of Sanitary Sewer Systems	Assignment 2 & Design Project
WEEK 10	Storm Drainage Systems, Storm Water Quantities	Assignment 3
WEEK 11	Storm Drainage System Design	Assignment 3
WEEK 12	Surface Water Supplies & Reservoir Analysis, Groundwater Supplies & Well Hydraulics	Assignment 3
WEEK 13	Urban Stormwater Management (if time permits)	

FINAL EXAMINATION	Scheduled during the regular University Final Examination period established by the Registrar's Office

4. ASSESSMENT OF LEARNING	WEIGHT %
Assignments	21%
Design Project	9%
Midterm Test	25%
Final Examination	45%

5. LEARNING OUTCOMES

1) 1. Explain the key components of water distribution and wastewater collection systems (GA 1.4);
2) 2. Apply hydrologic and hydraulic principles to the calculation/design of pipe networks (GA 1.1, 1.4, 2.1, 2.2, 4.1);
3) 3. Apply hydrologic and hydraulic principles to the calculation/design of open channels and hydraulic structures (GA 1.1, 1.4, 2.1, 2.2, 4.1);
4) Calculate the system head curve and select an appropriate pump (GA 1.1, 1.4, 4.1).
5) Note: GA stands for Graduate Attribute.

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 required 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.

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 types of academic dishonesty please refer to the *Academic Integrity Policy*, located at www.mcmaster.ca/academicintegrity.

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
3. Copying or using unauthorized aids in tests and examinations.

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

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES POLICY

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) https://sas.mcmaster.ca/ to make arrangements with a Program Coordinator. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's https://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDEGENOUS 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 requiring a RISO accommodation 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.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK – MSAF (ASSIGNMENTS, MID-TERMS, ETC)

The McMaster Student Absence Form is a self reporting tool for **Undergraduate Students** to report absences that last up to 3 days and provides the ability to request accommodation for any missed academic work worth less than 25%. 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 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/

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://www.mcmaster.ca/policy/General/HR/Discrimination_and_Harassment.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

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