# COURSE OUTLINE

## 1. COURSE INFORMATION

**Course Name:** Municipal Hydraulics Course Code: CIVENG 3M03

**Session Offered:** Winter 2026

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

**Instructor**: Sonia Hassini Email: hassins@mcmaster.ca

**Class Schedule Day(s):**

Lectures: Fridays 4:30 PM - 6:20 PM

Tutorials – Section 1: Fridays 10:30 AM - 12:20 PM

Tutorials – Section 2: Tuesdays 2:30 - 4:20 PM

**Teaching Assistants:**

Mahmoud Abdelaziz Abdelrahman Email: abdem26@mcmaster.ca

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

## 2. COURSE OBJECTIVES

Upon successful completion of this course, students will be able to:

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

## 3. COURSE SPECIFIC POLICIES

1) The course notes, assignments, tutorials 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. Posted notes are not intended to replace the lectures. Tutorials will be used to practice key concepts presented in the lectures and deliver additional relevant materials to solidify class material. Attendance and active participation are expected for both lectures and tutorials.

3) Announcements made in class or posted on Avenue are considered communicated to all students, including those who did not attend.
4) Tutorial Quizzes (5 quizzes) will be based on the assigned tutorials and completed during the tutorial session. Full marks will be awarded for completion.
5) The project will be done in groups of three to four students. It is the responsibility of each group member to ensure that only the names of those who have equally contributed are included. If conflicts arise, first attempt to resolve them within the group. If unresolved, contact the TAs and cc the instructor promptly. Any group member who does not respond on time, does not contribute, or hinders the group's progress will be removed from the group and required to complete the project individually.
6) 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.
7) 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.
8) It is the responsibility of students to check their marked work within one week of posting and ensure that the marks entered on the course website are correct.

## 4. SCHEDULE

| | **Tentative Lecture Topic** | **Assessment Due Date** |
|---|---|---|
| WEEK 1 (Jan 5) | Introduction & Water Demand Analysis | |
| WEEK 2 (Jan 12) | Water Transmission - Continuity and Energy Equations, Gravity and Pressure Systems, Steady Uniform Flow, Friction Head Losses and Local Head Losses | |
| WEEK 3 (Jan 19) | Water Distribution Systems | |
| WEEK 4 (Jan 26) | Water Distribution Network | Assignment 1 (Jan 26) |
| WEEK 5 (Feb 2) | Water Distribution Network Analysis | |
| WEEK 6 (Feb 9) | Distribution Storage, Pumps and Pumping | Assignment 2 (Feb 9) |
| **Reading Week (Feb 16 – 20) – No Classes** | | |
| WEEK 7 (Feb 23) | Sewerage and Drainage Systems | |
| WEEK 8 (Mar 2) | Wastewater Quantities, Hydraulics of Sanitary Sewer Systems | Midterm Test (Mar 6) |
| WEEK 9 (Mar 9) | Hydraulics of Sanitary Sewer Systems, Design of Sanitary Sewer Systems | |

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|---|---|---|
| WEEK 10 (Mar 16) | Storm Drainage Systems, Storm Water Quantities | Project Report & Presentation Slides (Mar 16) |
| WEEK 11 (Mar 23) | Storm Drainage System Design | |
| WEEK 12 (Mar 30) | Surface Water Supplies & Reservoir Analysis, Groundwater Supplies & Well Hydraulics | Assignment 3 (Mar 30) |
| WEEK 13 (Apr 6) | Review | |
| FINAL EXAMINATION | Scheduled during the regular University Final Examination period established by the Registrar's Office | |

| **5. ASSESSMENT OF LEARNING** | **WEIGHT %** |
|---|---|
| Tutorial Quizzes | 3% |
| Assignments | 15% |
| Design Project | 12% |
| Midterm Test | 25% |
| Final Examination | 45% |

## 6. LEARNING OUTCOMES

1) Explain the key components of water distribution and wastewater collection systems (GA **1.4**).
2) Apply hydrologic and hydraulic principles to the calculation and design of pipe networks (GA **1.1**, **1.4**, 2.1, **2.2**, 4.1, **4.2**).
3) Apply hydrologic and hydraulic principles to the calculation and design of open channels and hydraulic structures (GA **1.1**, **1.4**, 2.1, **2.2**, 4.1, **4.2**).
4) Calculate the system head curve and select an appropriate pump (GA **1.1**, **1.4**, 4.1, **4.2**).
5) Introduce and apply EPANET to model and analyze water distribution networks (GA 5.1, 5.2).
6) Introduce EPA-SWMM for stormwater and sanitary system modeling concepts (GA 5.1).

## 7. 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.

## 8. 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.

## 9. 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 |