

**SAULT STE. MARIE, ON
SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

COURSE OUTLINE

COURSE TITLE: MUNICIPAL SERVICES

CODE NO.: CIV200 **SEMESTER:** IV

PROGRAM: CIVIL ENGINEERING TECHNOLOGY

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APPROVED: *D. J. Elliott* **DEAN** *9/10/95* **DATE**

MUNICIPAL SERVICES
COURSE NAME

CIV200
COURSE CODE

TOTAL CREDIT HOURS: 64

PREREQUISITE(S): WTR330 or MCH203

I. PHILOSOPHY/GOALS:

This course will introduce the student to the basic principles and procedures for the design and construction of water distribution, sanitary sewer and storm drainage systems. Land development, planning and administration policies will be discussed, along with waste management, conventional water and wastewater treatment processes. Sound environmental practices and procedures will be emphasized throughout the course.

II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):

Upon successful completion of this course the student will:

- 1) Apply the basic principles of hydraulics applicable to water distribution and wastewater collection.
- 2) Apply the principles of hydrology to stormwater management systems, including environmental considerations.
- 3) Identify components of a water distribution system and apply the principle criteria for design.
- 4) Identify components of a sanitary sewage collection system and apply principle criteria for design.
- 5) Identify components of a storm sewage collection system and apply principle criteria for design.
- 6) Describe water quality criteria and treatment requirements for drinking water and wastewater.
- 7) Describe solid and hazardous waste management methods.
- 8) Identify municipal planning policies and procedures.

III. TOPICS TO BE COVERED:

- 1) Hydraulics
- 2) Hydrology
- 3) Water Distribution Systems
- 4) Sanitary Sewer Systems
- 5) Stormwater Management
- 6) Water and Wastewater Treatment
- 7) Solid and Hazardous Waste
- 8) Planning

IV. LEARNING ACTIVITIES/REQUIRED RESOURCES

1. Hydraulics

Learning Activities: In class instruction and problem sets on:
- Flow design parameters
- Total energy calculations
- Losses
- Gravity flow in pipes
- Pressure flow in pipes

Resources: Chapter 2 and handouts

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2. Hydrology

Learning Activities: In class instruction and problem sets on:
- Water uses
- Hydrologic cycle
- Hydrographs
- Rainfall
- Erosion process and Sedimentation control
- Surface and groundwater
- Open channel flow and water surface profiling

Resources: Chapter 3 and handouts

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3. Water Distribution Systems

Learning Activities: In class instruction and problem sets on:
- Design factors
- Applications for pipe flow formulae
- Estimate water demands
- System design calculations

Resources: Chapter 7

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4. Sanitary Sewer Systems

Learning Activities: In class instruction and problem sets on:
- Design factors
- Applications for pipe flow formulae
- Estimate design flows
- Sanitary sewer design calculations

Resources: Chapter 8

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5. Stormwater Management

Learning Activities: In class instruction and problem sets on:
- Rational method
- Rainfall-frequency-intensity-duration relationships
- Design storm
- Storm sewer design calculations

Resources: Chapter 9

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6. Water and Wastewater Treatment

Learning Activities: In class instruction and problem sets on:
- Water quality and chemistry
- Treatment of drinking water
- Treatment of wastewater

Resources: Chapters 4, 5, 6 and 10

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7. Solid and Hazardous Waste

Learning Activities: In class instruction and problem sets on:
- Quantities and characteristics
- Processing, recovering and landfilling
- Hazardous waste management and transportation
- Legislation for air, soil and water pollution

Resources: Chapter 11 and 12

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8. Planning

Learning Activities: In class instruction and problem sets on:
- Land development
- Official Plan and Zoning

Resources: Course notes and handouts

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V. **EVALUATION METHODS:** (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS, ETC.)

A final grade will be derived as follows:

Assignments	25%
Term Tests (3 @ 25%)	75%
Total	<u>100%</u>

The grading system used will be as follows:

A+	90% - 100%
A	80% - 89%
B	70% - 79%
C	55% - 69%
R	Repeat

- 1) Late assignments will be penalized 10% for each day late.
- 2) Minimum acceptable grade for this course is 55%.
- 3) If at the end of the semester the overall mark is below 55%, then it will be up to the instructor whether or not a rewrite test will be granted. The criteria employed for arriving at that decision is class attendance, class participation and overall grade, which should be at least 45%.
- 4) In the case a rewrite is granted, it will be permitted only once, it will cover the entire course outline and will limit the maximum obtainable grade for the course to 60%.

VI. REQUIRED STUDENT RESOURCES

Required Text Nathanson, Jerry A.; Basic Environmental Technology; Wiley

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY:

Book Section Ministry of the Environment and Energy; Guidelines for the design of Sanitary Sewage Works, Storm Sewers, Water Distribution Systems, Water Storage Facilities...etc.

Ministry of Transportation and Municipal Engineers Association; Ontario Provincial Standard Drawings and Specifications

VIII. SPECIAL NOTES

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

