SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE MARIE, ON

COURSE OUTLINE

Course Title: MUNICIPAL SERVICES

Code No.: CIV 200-5 **Semester: IV**

Program: CIVIL ENGINEERING TECHNOLOGY

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Date: December 1998 **Previous Outline Date: January 1994**

Approved: K. DeRosario — Dec 15/98

Dean **Date**

Total Credits: 4 **Prerequisite(s): MCH 203**

Length of Course: 16 weeks **Total Credit Hours: 64**

I. **COURSE DESCRIPTION: This is an introductory course to municipal services. Students will be introduced to the basic principles and procedures for the design and construction of water distribution, sanitary sewer and storm drainage systems. Also, conventional water and wastewater treatment processes are studied.**

II. **LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**
(Generic Skills Learning Outcomes placement on the course outline will be determined and communicated at a later date.)

Upon successful completion of this course the student will demonstrate the ability to:

1) Apply the basic principles of hydraulics applicable to water distribution and wastewater collection.

Potential Elements of the Performance:

- explain the principles of hydrostatic pressure
- complete calculations with hydrostatic pressure
- apply Bernoulli's principle
- complete calculations to determine flow
- complete calculations to determine flow in pipes under pressure
- complete calculations to determine flow in channels

2) Apply the principles of hydrology to stromwater management systems, including environmental consideration.

Potential Elements of the Performance:

- list water uses and availability
- explain the hydrologic cycle
- calculate rainfall intensity and volume
- define and determine watersheds
- interpret hydrographs
- define aquifers
- calculate groundwater flows
- identify components of a typical well layout

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE (Continued)

3) Identify components of a water distribution system and apply the principle criteria for design.

Potential Elements of the Performance:

- list appropriate design factors
- estimate water demands
- complete system design calculations
- list materials of construction for various components of system
- describe types of distribution reservoirs and indicate their location
- complete calculations for water flow in pipe network

4) Identify components of a sanitary sewage collection system and apply the principle criteria for design.

Potential Elements of the Performance:

- list appropriate design factors
- apply pipe flow formulate
- estimate flows
- complete sanitary sewer design calculations
- list materials of construction for various components of system
- determine infiltration and inflow into systems
- complete calculations for water flow in pipe network

5) Identify components of a storm sewage collection system and apply the principle criteria for design.

Potential Elements of the Performance:

- estimate storm runoff volumes
- describe effects of land development on storm runoff
- list factors to be considered in storm sewer layout and design
- complete storm sewer design calculations
- describe the effects of flooding

6) Describe water quality criteria and treatment requirements for drinking water and wastewater.

Potential Elements of the Performance:

- apply basic chemistry principles for water and wastewater treatment
- describe the chemical, physical and biological parameters of water and wastewater quality
- explain the basic treatment of drinking water
- explain the basic treatment of wastewater

7) Describe solid and hazardous waste management methods.

Potential Elements of the Performance:

- quantify and characterize solid waste
- describe solid waste processing including incineration, landfilling and recycling
- list important criteria for landfilling solid wastes
- define hazardous wastes
- describe the manifest system for hazardous wastes

8) Identify municipal planning policies and procedures.

Potential Elements of the Performance:

- list appropriate policies and procedures
- describe the land development process
- apply planning and zoning by-laws

III. TOPICS:

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. REQUIRED RESOURCES/TEXTS/MATERIALS:

Basic Environmental Technology - Water Supply, Waste Management, and Pollution Control, Nathanson, (Second Edition)

V. EVALUATION PROCESS/GRADING SYSTEM

The final grade will be determined according to the following components and weighting:

Assignments	-	**25%**
Term test (3@ 25%)	-	**75%**

Grading System

A+ - Consistently Outstanding; 90 - 100 %
A - Outstanding Achievement; 89 - 90 %
B - Consistently Above Average Achievement;70 - 79 %
C - Satisfactory Achievement; 60 - 69 %
R - Repeat; Objectives of course not met ; less than 60%

VI. SPECIAL NOTES:

- Special Needs
  If you are a student with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, 491 so that support services can be arranged for you.

- Retention of Course Outlines
  It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other post-secondary institutions.

- Substitute Course Information is available at the Registrar's Office.

VII. PRIOR LEARNING ASSESSMENT

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following: