

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



COURSE OUTLINE

Course Title; WATER SUPPLY & TREATMENT

Code No.; WTR 210-4

Semester; IV

Program; Environmental Engineering Technician/Technology
Water Resources Engineering Technology

Author; Lory Vanderzwet

Pate; December 1998 Previous Outline Pate; February 1996

Approved;

K. DeRosario
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Pate

Total Credits; 4

Prerequisite(s); CHM 104

Length of Course; 16 Weeks

Total Credit Hours; 64

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For additional information, please contact Kitty DeRosario, Dean, School of Trades
& Technology, (705) 759-2554, Ext. 642.

COURSE NAME

COURSE NUMBER

- I. COURSE DESCRIPTION: This is a course designed to present basic knowledge and practices, theories and applications relevant to sources of water supply, treatment processes, quality parameters and plant operations.**
- n. 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) Evaluate various bacterial and physiochemical characteristics of water as parameters of water quality.

Potential Elements of the Performance.

- List and explain applicable bacteriological characteristics of water
- Describe bacteriological testing procedures for water
- List and explain applicable physical and chemical characteristics of water
- Apply drinking water standards

- 2) Identify and evaluate various unit operations (physical, chemical and biological) commonly used in the treatment of water.

Potential Elements of the Performance:

- Identify typical sources of drinking water
- Describe unit operations of water treatment typically employed to remove organisms, turbidity, colour, hardness and dissolved salts.
- Describe unit operations of water treatment typically employed to fluoridate drinking water
- Explain the processes of coagulation and flocculation
- Explain the corrosion control and stabilization measures found in a water treatment facility

**n. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE
(Continued)**

- 3) Perform design computations and determine operational parameters used in process control.

Potential Elements of the Performance:

- Determine water usage for given populations
- Determine appropriate sizes of clarifiers and filtration units.
- Determine appropriate dosages of chemical additives such as alum and fluoride.

- 4) Conduct laboratory analysis for typical physiochemical characteristics of water.

Potential Elements of Performance:

- Analyze a given water sample for the following characteristics to a designated accuracy:
 - turbidity
 - colour
 - pH
 - alkalinity
 - coagulant effectiveness
 - chlorine
 - hardness

- 5) Conduct plant operations and performance evaluation.

Potential Elements of Performance:

- Accurately prepare chemical solutions
- Determine applicable dosage rates of chemicals
- Operate and monitor the pilot scale water treatment plant for one complete school day
- Calculate the efficiency of the water treatment plant

m. TOPICS;

- 1) Water Quality Standards
- 2) Water Supplies
- 3) Unit Operations in Water Treatment
- 4) Water Treatments
- 5) Testing Procedures for Water Quality

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Hammer, Mark J. Water and Wasterwater Technology TSI version), 2nd edition, John Wiley and Sons,

Laboratory Manual, Water Supply and Treatment

V. EVALUATION PROCESS/GRADING SYSTEM

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

Assignments and Laboratory Work	-	30%
Two term tests (35% each)	-	<u>35%</u>
		100 %

Grading System

A+	-	90 -100%
A	-	80•89%
B	-	70- 79%
C	-	60•69%
R	-	Less than 60%; course objectives have not been met

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.

Vn. 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: