SADLT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE;	WATER SUPPLY & TREATMENT
CODE NO.:	WTR 201-4 SEMESTERS: IV
PROGRAM:	ENVIRONMENTAL ENGINEERING/WATER RESOURCES
AUTHOR:	JOHN THEIL
DATE:	FEBRUARY 1995 PREVIOUS OUTLINE DATED: FEBRUARY 1993

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WATER SUPPLY & TREATMENT WTR 201-4

COURSE NAME CODE NO.

TOTAL CREDIT HOURS: 64

PREREQUISITE(S): WTR 330 - HYDRAULICS

I. **PHILOSOPHY/GOALS**:

To present basic knowledge and practices, theories and applications relevant to sources of water supply, treatment processes, quality parameters and plant operations.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will be able to:

1. Evaluate various bacterial and physiochemical characteristics of water as parameters of water quality.

2. Apply drinking water standards.

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

4. Perform design computations and determine operational parameters used in process control.

5. Perform laboratory analyses for turbidity, colour, pH, alkalinity, coagulant effectiveness, chlorine and residual and hardness.

6. Conduct plant operation and performance evaluation, including preparation of chemical solutions, determination of dosage rates, selection of points of application, and backwashing.

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III. TOPICS TO BE COVERED:

TOPIC	NO. OF WEEKS
1. Water Quality and Standards	2
1.1 Bacteriological characteristics	
1.2 Bacteriological testing procedures	
1.3 Physical and Chemical characteristics	
1.4 Drinking water standards	
2. Water Processing	11
2.1 Introduction to water supply systems	
2.2 Sources of water supplies	
2.3 Unit operations of water treatment	
2.4 Surface water and ground water treatment systems	
2.5 Disposal of waste from water treatment processes	
2.6 Mixing and flocculation	
2.7 Sedimentation, clarifiers	
2.8 Filtration	
2.9 Chemical feeders	
2.10 Chlorination	
2.11 Fluoridation	
2.12 Iron and manganese removal	
2.13 Hardness removal	
2.14 Turbidity and Colour	
2.15 Removal of dissolved salts	
2.16 Corrosion control and stabilization	
3. Operation of Water Treatment, Plant and Distribution	2
3.1 Groundwater treatment plant	
3.2 River water treatment plant	
3.3 Water quality control	
3.4 Water distribution maintenance and surveillance	

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IV. METHOD OF ASSESSMENT:

Laboratory Work/Assignments	30%
Interim Examination	25%
Final Examination	45%

Grading:

A+ 90-100% A 80-89% B 70-79% C 60-69%

A passing grade will be based on a composite grading of 60%. Students obtaining a composite grading of 55 to 59% may be allowed to complete a supplementary examination.

V. REQUIRED STUDENT RESOURCES:

Textbooks:

Hammer, Mark J. Water and Wastewater Technology (SI Version),2nd Edition, John Wiley and Sons, Toronto, 1977.

Laboratory Manual, Water Supply and Treatment

VI. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

Fair, Gordon Maskey, Geyer, John C, Elements of Water Supply and Wastewater Disposal, 2nd edition, John Wiley and Sons, Toronto, 1971.

Viessman, W. Jr., Hammer, M. J., Water Supply and Pollution Control, 4th edition. Harper and Row Publishers, New York, 1985.

Tchobanoglous, G., E.D. Schroeder, Water Quality, Addison-Wesley Publishing Company, Don Mills, Ontario, 1985.

Peavy, H.S., D.R. Donald, G. Tchobanogluns, Environmental Engineering, McGraw Hill Book Company, Toronto, 1985.

VII. **SPECIAL NOTES:**

Students with special needs (e.g. 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.