DOC. 420

SAULT COLLEGE OP APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

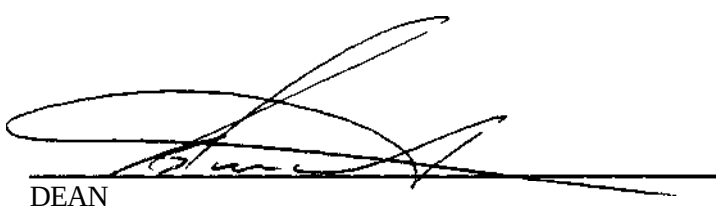
COURSE TITLE: WATER SUPPLY & TREATMENT

CODE NO.: WTR 201-4 SEMESTERS: IV

PROGRAM: ENVIRONMENTAL/WATER RESOURCES ENGINEERING TECHNOLOGY

^AUTHOR: JOHN THEIL, P.Eng.

DATE; FEBRUARY 1997 PREVIOUS OUTLINE DATEDi FEBRUARY 1996

APPROVED:  X//?^c// /'/ /?y 7

DEAN DATE

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 toj

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.

WATER SUPPLY & TREATMENT — WTR 201-4

COURSE NAME — CODE NO.

III. TOPICS TO BE COVEREDs

TOPIC	NO. OF WEEKS
Water Quality and Standards	
1.1 Bacteriological characteristics	
1.2 Bacteriological testing procedures	
1.3 Physical and Chemical characteristics	
1.4 Drinking water standards	
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	
Operation of Water Treatment, Plant and Distribution	
3.1 Groundwater treatment plant	
3.2 River water treatment plant	
3.3 Water quality control	
3.4 Water distribution maintenance and surveillance	

WATER SUPPLY & TREATMENT **WTR 201-4**

COURSE NAME CODE **NO.**

IV. METHOD OF ASSESSMENT:

Interim Examination (2 @ 20%)	40%
Final Examination	60%

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 Ouality f 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.