

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: WATER SUPPLIES & TREATMENT

Code No.: WTR 2UI-b

Program: WATER RESOURCES/PULP & PAPER ENGINEERING TECHNOLOGY

Semester: IV VI

Date: MAY iyb9

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New: Revision: X U)

APPROVED:   
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Id/rL ScJTl  
Date

WTR 2U1-b  
WATER SUPPLIES & TREATMENT

WATER SUPPLIES & TREATMENT

Course Name

WTR 2U1-I5

Course Number

GOALS;

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

OBJECTIVES:

1. Evaluate various bacterial and physiochemical characteristics of water as parameters of water quality.
2. Apply drinking water standards.
- J. Identify and evaluate various unit operations (physical, chemical and biological) commonly used in the treatment of water.
4. Develop skills for making fast and accurate computations needed for design as well as operational parameters used in process control.
- b. Carry out laboratory analysis for turbidity, colour, pH, alkalinity, coagulant effectiveness, chlorine and fluoride residual, hardness, iron, manganese and total dissolved solids.
- b. Perform plant operations including preparation of chemical solutions, determination of dosage rates, selection of points of application, and backwashing.

METHOD OF ASSESSMENT (GRADING METHOD);

Laboratory Work/Assignments	-3U%
Interim Examinations (2 y 2U%)	4U%
Final Examination	3U%

GRADING;

A passing grade will be based on a composite grading of 6U%. Students obtaining a composite grading of bb to by% may be allowed to complete a supplementary examination.

A+ yu-iuu%      A au-«y%      B /u-/y%      c 6U-6y%

TEXTBOOKS;

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

Ministry of the Environment, Laboratory Skills for Plant Operators, Vol. 2, lib St. Clair Avenue West, Toronto, Ontario.

REFERENCES;

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

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

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

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

TAPPI, Water Supply and Treatment, State-of-the-Art, Technical Association of the Pulp and Paper industry. One Dunwoody Park, Atlanta, GA, iUJb, ly/a

COURSE OUTLINE;

Water quality and pollution, water processing, sedimentation, tiltration, chemical treatments, sottoning and desalination, chlorination, tiouridation, operation ot water works.

TOPIC	NO. OF WEEKS
1. Water quality and standards	
1.1 Bacteriological characteristics	
1.2 Bacteria testing procedure	
1.i Physical and Chemical characteristics	
1.4 Drinking water standards	
2. Water Processing	11
2.L Introduction to water supply systems	
2.2 Sources ot water supplies	
2.3 Unit operations ot water treatment	
2.4 Surtace water and ground water treatment systems	
2.b Disposal ot waste trom water treatment processes	
2.b Mixing and tloccuiation	
2./ Chemical teeders	
2.a sedimentation, claritiers	
2.y Filtration	
2.1U Iron and manganese removal	
2.11 Hardness removal	
2.12 Chlorination	
2.1-J Flouridation	
2.14 Turbidity and odour control	
2.1b Removal ot dissolved salts	
2.1b Corrosion control and stabilization	
J. Operation ot water treatment, plant and distribution	
J.1 Groundwater treatment plant	
J.2 River water treatment plant	
6.i Water quality control	
i.4 Water distribution maintenance and surveillance	
J.b Water rates	

LABORATORY EXERCISES

1. Colour and turbidity
2. Alkalinity and ph
- J. Jar test
4. Hardness and aggressive index
- b. Chlorine/fluoride residual
- b. Design parameters of treatment devices
- /. Plant operation and process control