

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

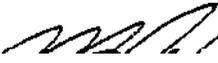
COURSE TITLE: HAZARDOUS WASTE DISPOSAL

CODE NO.: WTR 329-4 SEMESTER: VI

PROGRAM: WATER RESOURCES ENGINEERING TECHNOLOGY

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DATE: NOVEMBER 1989 PREVIOUS OUTLINE DATED: MAY 1989

APPROVED:  DATE y^  
C M I R P M S O N ^

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HAZARDOUS WASTE DISPOSAL

WTR 329-4

**COURSE NAME**

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**TOTAL CREDIT HOURS**        **45**

**PREREQUISITE(S):** CHM230, WTR201, WTR226

**I. PHILOSOPHY/GOALS:**

Hazardous wastes range in nature from common household trash to complex materials in industrial wastes, sewage sludge, agricultural residues, mining refuse and pathological wastes. The purpose of this course is to assess the various types of hazardous wastes, and to determine appropriate handling, waste treatment and disposal techniques.

**II. STUDENT PERFORMANCE OBJECTIVES:**

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

1. Identify and classify liquid industrial and hazardous wastes according to current practices.
2. Describe the factors affecting the risk assessment of hazardous waste.
3. Identify the types and sources of solid wastes and the influencing factors related to physical and chemical composition and waste generation rates.
4. Describe materials flow in society, reduction in raw materials usage, reduction in solid wastes quantities, re-use of materials, materials recovery, energy recovery, and solid waste management.
5. Develop design procedures for physical, chemical and biological treatment of liquid industrial and hazardous wastes.
- b. Evaluate landfiling with respect to site selection, landfilling methods and operations, occurrence of gases and leachate in landfills, and movement and control of landfill gases and leachate.
7. Describe thermal incineration fundamentals.

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**III. TOPICS TO BE COVERED:**

<u>TOPICS</u>	<u>HOURS</u>
1. Course Introduction	1
2. Origin and Nature of Hazardous Wastes Components of a Hazardous Waste Treatment Facility	2
3. Registration Guidance Manual for Generators of Liquid Industrial and Hazardous Waste	4
4. Types/ Sources and Properties of Solid Wastes,	8
5. Engineered Systems for Resource and Energy Recovery	4
6. Treatment Technologies - Physical, Chemical, and Biological	10
7. Landfilling - Site Selection, Operation and Control of Gas and Leachate Production	6
8. Thermal Incineration Fundamentals	4
	39
Review	2
Interim Test/Final Examination	4

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**IV. METHOD OF EVALUATION:**

Assignments/Lab Work	30%	Grading:
Interim Test	25%	A+ 90-100%
Final Examination	45%	A 80 - 89%
		B 70 - 79%
		C 60 - 69%

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

**V. REQUIRED STUDENTS RESOURCES:**

Wentz, Charles A. Hazardous Waste Management/ McGraw-Hill Book Company, Toronto.

Registration Guidance Manual for Generators of Liquid Industrial and Hazardous Waste; Ministry of the Environment.

**VI. REFERENCES:**

Peavy, Howard S., Donald R. Rowe, George Tchobangolous. Environmental Engineering, McGraw-Hill Book Company, Toronto.

Viessman Jr., Warren, Mark J. Hammer. Water Supply and Pollution Control, Harper & Row, Publishers, New York