

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: WATER POLLUTION

Code No.: BIO 129-4

Program: WATER RESOURCES TECHNOLOGY/PULP & PAPER ENGINEERING TECHNOL

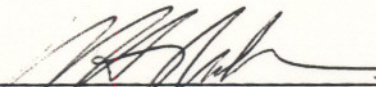
Semester: II V

Date: JANUARY, 1987

Author: V. WALKER

New: _____ Revision: X

APPROVED:


Chairperson

May 5 1987
Date

BIO 129-4 WATER POLLUTION

Water Pollution

BIO 129-4

COURSE NAME

COURSE NUMBER

PREREQUISITE: AQUATIC BIOLOGY 125-3

PHILOSOPHY/GOALS:

This is a course designed to provide an introduction to the biological effects of water pollution and to ways of detecting, describing and quantifying these effects in the field and the laboratory. Types and sources of pollution, sampling strategies and legislation governing water quality will be discussed.

METHOD OF ASSESSMENT (GRADING METHOD):

Oral Presentation:	10 marks	90% & over	- A+
Lab Reports (4)	40 marks	80-89%	- A
Term Tests (3)	50 marks	70-79%	- B
		60-69%	- C
	<u>100</u> marks	Under 60%	- I

ATTENDANCE:

Lab attendance is compulsory. Students missing labs without documented reason run the risk of repeating the course.

EVALUATION

Students failing two or more term tests will write a final exam covering the entire course content regardless of their total accumulated marks, during the rewrite period. Students with a final grade of less than 60% will write a final exam covering the entire course content during the rewrite period.

TEXTBOOK(S):

Mason, C. F., 1981. Biology of Freshwater Pollution, Longman Group Ltd., New York.

WATER RESOURCES TECHNOLOGY

BIO 129-4

WATER POLLUTION

WEEK

1	UNIT 1	INTRODUCTION <ul style="list-style-type: none">- what is pollution?- complexity of pollution- the ecosystem concept- (video)
2,3	UNIT 2	FRESHWATER SYSTEMS <ul style="list-style-type: none">- general characteristics- the lotic environment- the lentic environment- stability of ecosystems
4	TERM TEST #1	
4	UNIT 3	CHEMICAL AND PHYSICAL ASPECTS OF WATER POLLUTION <ul style="list-style-type: none">- dissolved oxygen- carbon dioxide
5	LAB 1.	TEMPERATURE AND OXYGEN CONSUMPTION IN AQUATIC ORGANISMS <ul style="list-style-type: none">- pH, acidity, alkalinity, hardness- hardness- phosphorus- total dissolved solids- transparency, colour- BOD, COD

WEEK

- | | | |
|-----|--------------|---|
| 6 | LAB 2 | PRIMARY PRODUCTION OF STANDING WATER |
| 7,8 | UNIT 4 | BIOLOGICAL ASPECTS OF WATER POLLUTION <ul style="list-style-type: none">- (Film Strip: Freshwater Pollution)- eutrophication- bottom fauna- bacteria, algae- zooplankton, fish- (Video: H₂ Overview) |
| 8 | TERM TEST #2 | |
| 9 | LAB 3 | STANDARD BACTERIAL PLATE COUNT |
| 10 | UNIT 5 | TYPES AND SOURCES OF POLLUTION <ul style="list-style-type: none">- toxicity |
| 10 | LAB 4 | BIOASSAY <ul style="list-style-type: none">- students' oral presentations (speaker: Sea Lamprey)- environmental factors affecting toxicity- (Video: Early Warning)- tolerance, accumulation |

WEEK

13

UNIT 6 SAMPLING FOR WATER QUALITY

- apparatus
- sampling sites
- sampling strategy
- index species (SCI, biotic, diversity, indices)

14

UNIT 7

LEGAL ASPECTS OF WATER POLLUTION

- acts and legislation governing water quality
- (Video: Speaking Out - The Politics of Garbage)
- (MOE Speaker)

15

TERM TEST #3

NOTE: Schedule subject to change

LAB SCHEDULE

1. Lab 1. Temperature and Oxygen Consumption in Aquatic Organisms.
2. Lab 2. Primary Production of Standing Water.
3. Lab 3. Standard Bacterial Plate Count.
4. Lab 4. Bioassay

***Subject to change**

PRESENTATION TOPICS

Students are required to deliver a 20-minute oral presentation during a predetermined time slot. Students will work in groups of two and presentations will include visual aids as well as oral material delivered by each student. Term Test #3 will include information from students' presentations. The following topics are available for presentation:

NOTE: RELATE YOUR TOPIC TO WATER POLLUTION.

1. Metals (including mercury).
2. PCB's
3. Oil.
4. Insecticides
5. Pulp mill wastes.
6. Waste heat, (thermal pollution).
7. Nuclear pollution (radioactive waste).
8. Dioxin
9. Herbicides
10. Detergents.
11. Acid rain.

12. Mirex, dioxin.
13. Water-borne pathogens.
14. Food Processing Wastes.

NOTE: INCLUDE IN EACH PRESENTATION:

1. Description of the pollutant.
2. Sources of the pollutant (natural, man-caused).
3. The effect of the pollutant on the aquatic environment.
4. The water quality guidelines (standards) for the pollutant.
5. Any pertinent incidents* involving the pollutant.
6. Clean up/Controls (if applicable).

*Canadian incidents if possible

Each student group is responsible for producing an abstract (summary) of information presented as well as a list of references used.

Copies of each presentation summary and reference list will be produced (by instructor) for all students, prior to each presentation.