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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	APPLIED MICROBIOLOGY
CODE NO.:	WTR 326-4 **SEMESTER:** V
PROGRAM:	WATER RESOURCES ENGINEERING TECHNOLOGY
AUTHOR:	JOHN K. THEIL
DATE:	DECEMBER 1990 **PREVIOUS OUTLINE DATED:** SEPTEMBER 1989

APPROVED: _____ /2e<^(:>/^^
Dean **Date**

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TOTAL CREDIT HOURS: 60

PREREQUISITE(S): BIO 125 AQUATIC BIOLOGY
BIO 129 WATER POLLUTION

I. PHILOSOPHY/GOALS:

To acquaint students with the fundamentals of microbiology and practical implementation of microbiological principles with respect to environmental significance, water quality assessment and wastewater treatment requirements.

II. STUDENT PERFORMANCE OBJECTIVES:

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

1. Determine the basic requirements and procedures for microscopic observations of microorganisms.
2. Prepare culture media, and perform sterilization and media inoculation.
3. Demonstrate the presence of microorganisms in the air and on various surfaces.
4. Identify microorganisms of importance in water quality and wastewater treatment applications.
5. Isolate individual bacteria cultures by streak plate separation.
6. Prepare and examine microscopically hanging drop and temporary wet mount specimens.
7. Observe size differences and shapes of bacteria.
8. Distinguish mobility of bacteria and observe mobility of algae and protozoa.

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9. Perform microscopic observation of protozoa and determine relative predominance of the various classes of protozoa in mixed liquor of an activated sludge plant.

10. Observe algae and cyanobacteria for the purposes of classification and identification, and to describe the organisms with respect to importance in surface waters.

11. Carry out mycological culture techniques and identify structural components of fungi.

12. Carry out staining procedures.

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III. TOPICS TO BE COVERED:

UNIT	TOPIC	HOURS
1	Microscopic Observations	2
2	Microbes in the Environment Microbial Activities Microbes and Human Disease	4
	Eucaryotes and Procaryotes	3
	Distribution and Biological Activities of Protozoa Classification of Protozoa Protozoan Diseases	3
	Identification/Classification of Algae Algae in Water Supplies	
6	Morphology/Classification of Fungi	3
7	Microbiologic Stains Morphology of Bacteria Cell Structure	4
8	Classification of Procaryotes	2
9	Bacterial Growth/Reproduction Culture Media Culture/Identification Techniques Measuring Microbial Concentration	2
10	Control of Microorganisms	
		30
Laboratory Experiments		22
Review		3
Interim Tests/Final Examination		5

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IV. METHOD OF ASSESSMENT:

Laboratory Work/Assignments	30'
Interim Examinations 2 (? 20%	40-
Final Examination	30-

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:

McKane, Larry and Judy Kandel; Microbiology, Essentials and Applications; McGraw-Hill Book Company.

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

Pelczar, Jr., M J,; R.D. Reid and E.C.S. Chan, Microbiology- Fifth Edition; McGraw-Hill Book Company.

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.