

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: ENVIRONMENTAL MONITORING & ASSESSMENT
CODE NO. : NRT 254 **SEMESTER:** 4
PROGRAM: FISH & WILDLIFE TECHNICIAN
AUTHOR: T. WINTER
DATE: DEC 2009 **PREVIOUS OUTLINE DATED:** JAN 2009
APPROVED: "B. PUNCH"

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	CHAIR	DATE
TOTAL CREDITS:	4	
PREREQUISITE(S):	NIL	
HOURS/WEEK:	4	

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For additional information, please contact Brian Punch, Chair,
School of Natural Environment/Outdoor Studies & Technology Programs
(705) 759-2554, Ext. 2681

I. COURSE DESCRIPTION:

This course will provide the student with an understanding of world and regional environmental issues. Ways of detecting, describing and quantifying the effects of pollutants through field and laboratory analysis will be included. Types and sources of pollution in our water and air, monitoring strategies and legislation governing pollution including the introduction of exotic species, will be discussed. The development of environmental statements as applied to new resource basins will also be covered.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Discuss ecosystems, their components and associated terminology, ecological relationships, and types and sources of pollutants.

Potential Elements of the Performance:

- Explain key ecological concepts related to energy, biomass, bioaccumulation and bio-magnification.
- Competently perform respiration focused laboratory experiments, including preparation of several test specimens in a variety of closed system environments.
- Record data, and calculate metabolic rates in relation to dissolved oxygen, carbon dioxide and pH.
- Summarize and analyze results in a comprehensive standardized technical report format.

(This outcome will constitute 20% of the course's grade)

2. Discuss physiochemical characteristics of water including nitrogen and phosphorous cycles, acid deposition and buffering in lakes.

Potential Elements of the Performance:

- Explain terms and processes of light penetration, eutrophication, annual temperature profiles, and nutrient cycles.
- Explain the impacts of radioactivity, petroleum products, and heavy metals on freshwater systems.

- Undertake field work in winter conditions; perform data collection and proper water sample collection and assessment techniques using field survey equipment.
- Complete a spectrophotometric analysis of phosphorous in soil.
- Complete a scrapbook of recent articles pertaining to aquatic environment pollution.

(This outcome will constitute 25% of the course's grade)

3. Discuss pollution monitoring with respect to physio-chemical measurements, and toxicology.

Potential Elements of the Performance:

- Explain methods of measurement and acceptable parameters for a multitude of physio-chemical features.
- Explain effects of a toxicant, and degree of toxicity to living organisms, and testing limitations.
- Explain the purpose and complete a bioassay.
- Attend research labs where function and capabilities of analyzing equipment and techniques will be discussed.
- Complete a research summary of a pollutant and its environmental impacts.

(This outcome will constitute 20% of the course's grade)

4. Discuss pollution in regard to bio-monitoring, the biological assessment of water quality, and sampling design.

Potential Elements of the Performance:

- Explain how bio-monitoring is performed, sampling theory advantages and disadvantages, and stratification design.
- Collect invertebrates using field sampling equipment (Ekman dredge) and complete a species analysis and invertebrate population estimation.
- Plate preparation and bacterial coliform sample inoculation, plate count and colony survey assessment.
- Completion of comprehensive reports of experimental findings including discussion of water-borne fecal pollutants.

(This outcome will constitute 20% of the course's grade)

5. Discuss atmospheric pollutants and monitoring methodologies, climate change, legal responsibilities and latest trends in pollution.

Potential Elements of the Performance:

- Demonstration of air quality monitoring station.
- Discuss atmospheric layers, latest trends in environmental pollution, global warming and climate change.
- Explain legislation pertaining to pollution, roles and responsibilities of compliance.
- Discuss proper sampling procedures.

(This outcome will constitute 15% of the course's grade)

III. TOPICS:

1. **Pollution and Ecological Relationships**
2. **Freshwater Systems**
3. **Types and Sources of Pollutants**
4. **Monitoring of Pollution – Physio-Chemical Measurements and Toxicology**
5. **Monitoring of Pollution – Populations and Ecosystems**
6. **Monitoring of Pollution – Atmospheric Conditions & Climate Change**
7. **Introduction to Legal Responsibilities and Trends in Pollution**

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Environmental Monitoring and Assessment (NRT254) Study Guide
2. Environmental Monitoring and Assessment (NRT254) Lab Manual
3. Laboratory coat and lab safety glasses
4. Snowshoes, compass, field notebook, and clipboard.

V. EVALUATION PROCESS/GRADING SYSTEM:

Students will be evaluated on the basis of achievement of learning outcomes. These will be determined by:

1. Lecture Quizzes/Assignments	value 15%
2. Laboratory Experiments & Reports	value 45%
3. Theory tests	Test 1 midterm exam 20%
	Test 2 Final exam <u>20%</u>
	TOTAL VALUE 100%

Late submissions will be penalized -10% per school day late. Students who miss tests will not have an opportunity to rewrite without a valid excuse (i.e. doctor's note).

Attendance is mandatory at all labs and field trips. In the event of a valid excused absence, students will be required to make up an alternate lab or assignment on their own time. Failure to attend two labs and/or field trips will result in an immediate "F" grade.

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations. Announcements, news, the academic calendar of events, class cancellations, your learning management system (LMS), and much more are also accessible through the student portal. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session. *It is the departmental policy that once the classroom door has been enclosed, the learning process has begun. Late arrivers will not be granted admission to the room.*

Tuition Default:

Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments were not deferred or payment plan not honoured) as of the first week of *March* will be removed from placement and clinical activities. This may result in loss of mandatory hours or incomplete course work. Sault College will not be responsible for incomplete hours or outcomes that are not achieved or any other academic requirement not met as of the result of tuition default. Students are encouraged to communicate with Financial Services with regard to the status of their tuition prior to this deadline to ensure that their financial status does not interfere with academic progress.