

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: AQUATIC SURVEYS

CODE NO. : NRT 246 **SEMESTER:** 3

PROGRAM: FISH & WILDLIFE TECHNICIAN

AUTHOR: VALERIE WALKER

DATE: JUNE 2006 **PREVIOUS OUTLINE DATED:** JUNE 2005

APPROVED:

	_____	_____
	DEAN	DATE

TOTAL CREDITS: 3

PREREQUISITE(S): NONE

HOURS/WEEK: 3

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For additional information, please contact Colin Kirkwood, Dean
School of Technology, Skilled Trades & Natural Resources
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I. COURSE DESCRIPTION:

This is a field course designed to provide students with practical, hands-on instruction to assess the physical, chemical and biological parameters of lake and stream ecosystems. Surveys conducted will follow provincial protocols such as the Ontario Benthos Biomonitoring Network (OBBN) and the Ontario Stream Assessment Protocol (OSAP). In addition, students will conduct a creel survey to determine fishing pressure on the St. Mary's River during the salmon run.

A freshwater invertebrate collection of 20 identified specimens is required for submission.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Correctly use required field equipment and proper field technique in the assessment of aquatic ecosystems.

Potential Elements of the Performance:

- demonstrate in the field the effective and safe use of a backpack electro-fishing unit in sampling fish communities in streams as outlined in the Ontario Stream Assessment Protocol (OSAP)
- discuss the effect on fish physiology, the mechanics and safety considerations when operating an electro-fisher
- properly process and document fish samples
- correctly conduct point-transect sampling for channel structure, substrate and bank conditions using the Ontario Stream Assessment Protocol (OSAP)
- conduct an Ontario Benthos Biomonitoring Network (OBBN) survey using benthos in the assessment of aquatic habitats
- demonstrate the effective use of the Travelling-Kick-and-Sweep-Transect-Method to collect aquatic invertebrates

This learning outcome will constitute approximately 20% of the course's grade

2. Document, analyze and interpret field data and present in appropriate standardized forms, figures or maps.

Potential Elements of the Performance:

- construct a lake physical features map and a lake contour map for the areas of study using Arc/Info
- complete all summary forms, field collection records and scale sample envelopes for the area of study
- calculate volume, mean depth and shoreline development factor (S.D.F.) for the study lake
- compile all lake survey field data into a comprehensive technical report including summary statistics
- determine habitat suitability indices for specific indicator species based on field data
- correctly complete Ontario Benthos Biomonitoring Network (OBBN) and Ontario Stream Assessment Protocol (OSAP) standardized field forms

This learning outcome will constitute 40% of the course's grade

3. Conduct a creel survey to estimate sports fishing pressure and harvest rates by species.

Potential Elements of the Performance:

- explain the objectives of conducting a creel/survey and describe the two design types and the calculation differences for each in determining C.U.E. and harvest
- properly interview anglers, complete field records and input data as part of a creel survey
- describe various fish tagging and marking techniques and their limitations in estimating species abundance

This learning outcome will constitute 10% of the course's grade

4. Document, process and correctly identify 20 freshwater invertebrates for presentation.

Potential Elements of the Performance:

- properly collect, preserve and document aquatic invertebrates
- use effectively a binocular microscope and reference keys to correctly identify 20 aquatic invertebrates to Family

- submit an invertebrate collection as outlined with specimen collection records, index and references included

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

5. Describe various methods used in Ontario to assess the status of a fish population.

Potential Elements of the Performance:

- discuss the indicators of over exploitation
- describe Ontario's three provincial index netting standards (Spring Littoral Index Netting, Fall Walleye Index Netting and Nearshore Community Index Netting) to assess relative abundance
- discuss the role of fisheries as a reflection of the health of the environment

This learning outcome will constitute approximately 15% of the course's grade.

III. TOPICS:

Note: These topics sometimes overlap several areas of skill development and are not necessarily intended to be explored in isolated units or in the order below

1. Lake / Stream Surveys
2. Creel Census - objectives and design
3. Fish Tagging, Marking and Capture
4. Index Netting

IV. REQUIRED RESOURCES/ TEXTS/ MATERIALS:

Walker, V. 2006. Aquatic Surveys Lab Manual. Sault College, Sault Ste. Marie.

Voshell, J. Reese. 2002. Guide to Common Freshwater Invertebrates of North America. McDonald and Woodward Publishing Company. Blacksburg, Virginia

Ontario Ministry of Natural Resources. 1989. Manual of Instruction: Aquatic Habitat Inventories Surveys, eighth edition. Fisheries Branch, OMNR, Toronto. (ON LINE)

Waders

Mylar sheets

20 Vials

V. EVALUATION PROCESS/GRADING SYSTEM:

MAJOR ASSIGNMENTS AND TESTING

Tests	40%
Assignments	60%

NOTE:

- Attendance during field trips is **MANDATORY**. Students missing field trips without a valid, documented reason will risk repeating the course.
- ALL** submissions must be made for a passing grade
- Second Year Field Camp (NRT 251) provides an opportunity for data collection fundamental to mapping exercises and analysis in Aquatic Surveys (NRT 246). Failure to receive a satisfactory (S) grade in F&W Field Camp may seriously hamper success in Aquatic Surveys.

SUMMARY OF STUDENT EVALUATION

Aquatic Collection	10
Lake Survey Report	15
Lake Contour / Physical Features Maps	15
Stream Assessment Forms	10
Creel Survey	10
Tests (Lab/Theory)	40

	100

Late Assignments:

Ten percent (%) will be deducted from the total value of the assignment for every day late.

Late Equipment:

Ten percent (%) may be deducted from the total value of the assignment for chronic lateness in returning signed out equipment from the Tech Office

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	
A	80 – 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
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:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493 so that support services can be arranged for you.

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.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. 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.

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.

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

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean’s secretary. Students will be required to provide a transcript and course outline related to the course in question.