SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: AQUATIC SURVEYS

CODE NO. : NRT 246-4 **SEMESTER:** 3

PROGRAM: FISH & WILDLIFE TECHNICIAN

AUTHOR: VALERIE WALKER

DATE: AUG 2000 **PREVIOUS OUTLINE DATED:** JUNE 1999

APPROVED:

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DEAN DATE

TOTAL CREDITS: 4

PREREQUISITE(S): NONE

LENGTH OF COURSE: 16 WEEKS **TOTAL CREDIT HOURS:** 48

I. COURSE DESCRIPTION:

This is a field course designed to provide students with practical, hands-on experience to evaluate the physical, chemical and biological parameters of lake and stream ecosystems. Students will produce a depth contour map, a lake physical features map and a stream gradient profile based on field data.
In addition, the Ontario Habitat Suitability Index (OHSI) will be used to assess the suitability of stream habitat for specific indicator fish.

Gill nets, trap nets, seines and electrofishers will be utilized to assess fish species present and relative abundance. Proper handling and processing of fish will be practiced, as well as the removal of anatomical structures for age determination.

The purpose, procedure and data analysis for a creel survey will be considered and a creel survey will be conducted on the St. Mary's River during the salmon run.

A freshwater invertebrate collection of 25 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, to assess physical, chemical and biological parameters of both lake and stream ecosystems.

Potential Elements of the Performance:

- correctly operate and where necessary, calibrate the following instruments and equipment used in stream habitat assessment : oxygen meter, conductivity meter, pH meter, HACH kit, HYDROLAB, current meter, surber sampler, cover ring, vegetation grid

- demonstrate in the field the effective use of passive and active fish capture techniques such as minnow traps, seines and electrofishers

- discuss the effect on fish physiology, the mechanics and safety considerations when operating an electrofisher

- conduct a single pass and multiple pass electrofishing survey according to the Stream Assessment Protocol (Ontario)

- process fish by determining and recording total length; fork length; weight; sex; stomach contents; state of health; presence of parasites, tags or marks and by removing scales, fin rays cleithrum and/or otoliths for age determination

- properly preserve and document small littoral fish

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, lake contour map and stream gradient profile for the areas of study using appropriate technical pens, standardized symbols and single stroke commercial Gothic lettering

- complete all summary forms, field collection records and scale sample envelops for the area of study in HB pencil and neat, block lettering

- calculate stream velocity and discharge using current meter field data

- calculate volume, mean depth and shoreline development factor (S.D.F.) for the study lake

- determine habitat suitability indices for specific indicator species based on field data

This learning outcome will constitute 55% 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 25 freshwater invertebrates for presentation

   Potential Elements of the Performance:

   - use appropriate procedure to collect, preserve and document aquatic invertebrates
   - use effectively a binocular microscope and reference keys to correctly identify 25 aquatic invertebrates to at least 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

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 Survey
2. Stream Survey
3. Creel Census - objectives and design
4. Fish Tagging, Marking and Capture

V. EVALUATION PROCESS/GRADING SYSTEM:

MAJOR ASSIGNMENTS AND TESTING

Unit tests (3)	25%
Assignments	75%

Marks are cumulative, however due to the large field component of the course and the fact that much of the assignments are based on data collected in the field, students receiving a final grade of less than 60% will have the opportunity to rewrite the theory (unit Test) portion of the course only.

NOTE:

1. Attendance during field trips is **MANDATORY**. Students missing field trips without a valid, documented reason will risk repeating the course.

2. **ALL** submissions must be made for a passing grade

3. Second Year Field Camp (NRT 251-2) provides an opportunity for data collection fundamental to mapping exercises and analysis in Aquatic Surveys (NRT 246-3). Failure to receive a satisfactory (S) grade in F&W Field Camp may serious hamper success in Aquatic Surveys.

SUMMARY OF STUDENT EVALUATION

Aquatic Collection	15
Lake Contour Map, Transect Map and Data Collection Sheet	15
Physical Features Map	10
Remaining Lake Survey Forms	10
Gradient Profile	10
Stream Assessment Forms	10
Creel	5
Tests	25

	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 in postsecondary courses:

Grade	Definition	Grade Point Equivalent
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see *Policies & Procedures Manual - Deferred Grades and Make-up*).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has been impossible for the faculty member to report grades.	

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, 717, or 491 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, as may be decided by the professor. 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.

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 instructor. Credit for prior learning will be given upon successful completion of the following:

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.