

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE MARIE, ON



COURSE OUTLINE

Course Title: FISHERIES BIOLOGY & MANAGEMENT

Code No.: NRT 216                      Semester: IV

Program: ABORIGINAL RESOURCE TECHNICIAN

Author: Valerie Walker

Date: JAN 2002      Previous Outline Date: JAN 2001

Approved: \_\_\_\_\_

\_\_\_\_\_  
Dean, Natural Resources

\_\_\_\_\_  
Date

Total Credits: 3                      Prerequisite(s):

Length of Course: 3 hrs/week X 16 weeks

Total Credit Hours: 48

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*For additional information, please contact Brian Punch, Acting Dean,*  
*School of Natural Resources, (705) 759-2554, Ext. 688*

**I. COURSE DESCRIPTION:**

This course concentrates on fundamental aspects of anatomy, physiology, ecology and natural history of fishes of the Great Lakes Region. Emphasis will also be placed on Ontario's management strategies for important sports and commercial species. Lab sessions will develop skills in the identification and classification of freshwater fishes as well as in the collecting and recording of fish vital statistics and the preparation of fish aging structures.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

**1. Identify freshwater fishes from the Great Lakes basin to the family, genus and species level based on taxonomic characteristics.**

Potential Elements of the Performance:

- correctly identify both external and internal anatomical structures of a fish
- correctly demonstrate the use of meristics and morphometrics in fish classification
- recognize common fish families given key characteristics
- list the major fish orders and their associated families with species representatives for each family
- demonstrate effective use of a bifurcated (dichotomous) fish key
- identify to species Ontario's important sports and commercial fishes
- correctly identify to species juvenile salmonids and larval lamprey found in Ontario

*This learning outcome will constitute approximately 30% of the course.*

**2. Outline the biology and ecology of selected freshwater fishes of Ontario.**

***Potential Elements of the Performance:***

- discuss the relative proportions of marine versus freshwater species as well as the significance of fish relative to other vertebrates.
- explain the characteristics of water and its influence on fish design
- list the six (6) basic fish body shapes and key features for each
- discuss the various reproductive strategies of fish and their relative success

- list the various fish scale shapes and structures and discuss the distinguishing features for each
- discuss the function of external/internal structures and basic physiology of a generalized fish
- differentiate between anadromous and catadromous fishes, giving examples of each
- discuss the stages of fish development
- demonstrate an understanding of terminology specific to the salmon family.
- summarize the biology of an Ontario fish species based on classification, range, description, habitat, food habits, reproduction and importance.

*This learning outcome will constitute approximately 20% of the course.*

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

***Potential Elements of the Performance:***

- discuss the various methods of estimating fish populations
- 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
- outline techniques for the assessment of fish growth and fish age
- use Minitab to perform regression analysis on fish data
- list the factors affecting natality, mortality and stability
- discuss the indicators of over exploitation
- discuss the role of fisheries as a reflection of the health of the environment
- conduct angler interviews as well as process field data for a roving creel survey

*This learning outcome will constitute approximately 25% of the course.*

**4. Outline the various strategies for the management of Ontario's fisheries**

***Potential Elements of the Performance:***

- state the goals and strategic management actions to resolve Ontario's important fisheries management issues (SPOF II)
- outline and discuss the three (3) general approaches to fisheries management
- list and briefly discuss five methods of fisheries habitat enhancement
- argue the pro's and con's of fish stocking as a management tool

- list and explain various management prescriptions to reduce the harvest of a given fishery
- outline the quota system for the management for the commercial fishery in the Great Lakes

*This learning outcome will constitute approximately 25% of the course.*

### **III. TOPICS:**

1. Fish Classification and Identification
2. Fish Biology and Ecology
3. Fisheries Assessment
4. Fisheries Management

### **IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

Fisheries Biology & Management (NRT 216) Study Guide,  
Sault College of Applied Arts & Technology, Sault Ste. Marie.

Fisheries Biology & Management (NRT 216) Lab Manual,  
Sault College of Applied Arts & Technology, Sault Ste. Marie

Scott, W.B. and E.J. Crossman.1998. Freshwater Fishes of Canada.  
Gate House Publications Ltd., Oakville, Ontario.

### **V. EVALUATION PROCESS/GRADING SYSTEM**

<b>Unit Tests</b>	<b>30%</b>
<b>Lab tests/Assignments</b>	<b>55%</b>
<b>Small Fish Collection</b>	<b><u>15%</u></b>
	<b>100%</b>

Lab assignments and report values will be reduced at a rate of 10% per day for late submissions for a period of 5 days after the due date. After 5 days lab assignment/report value will be zero.

All labs and assignments must be submitted regardless of lateness to pass the course. Labs and/or tests missed without documented health or personal reasons will be valued at zero.

**Method of Assessment (Grading Method) The following letter grade will be assigned:**

A+	Consistently outstanding	(90% - 100%)
A	Outstanding achievement	(80% - 89%)
B	Consistently above average achievement	(70% - 79%)
C	Satisfactory or acceptable achievement in all areas subject to assessment	(60% - 69%)
R	Repeat -- The student has not achieved the objectives of the course and the course must be repeated.	(Less than 60%)
CR	Credit exemption	
X	A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course requirements.	

**NOTE: Students may be assigned an "R" grade early in the course for unsatisfactory performance.**

## **VI. SPECIAL NOTES:**

### Special Needs

If you are a student with special needs (e.g. Physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717 or 491 so that support services can be arranged for you.

### Plagiarism

Students should refer to the definition of "academic dishonesty" in the "Statement of Students 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.

Advanced Standing

Students who have completed an equivalent post-secondary course should bring relevant documents to the Coordinator, Natural Resources Programs.

Retention of Course Outlines

It is the responsibility of the student to retain all course outlines for possible future use in gaining advanced standing at other post-secondary institutions.

Substitute course information is available at the Registrar's Office.

**VII. PRIOR LEARNING ASSESSMENT:**

Please contact the Prior Learning Assessment Office (E2203) for further information.