



COURSE OUTLINE

NRT0228

Prepared: Ryan Namespetra Approved: Sherri Smith

Course Code: Title	NRT0228: ICHTHYOLOGY										
Program Number: Name	1120: COMMUNITY INTEGRATN										
Department:	C.I.C.E.										
Semester/Term:	17F										
Course Description:	This course concentrates on fundamental aspects of anatomy, physiology, ecology and natural history of fishes of the Great Lakes Region. Lab sessions will develop skills in the identification and classification of freshwater fishes as well as in the identification of their common parasites.										
Total Credits:	3										
Hours/Week:	3										
Total Hours:	45										
Essential Employability Skills (EES):	<p>#1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.</p> <p>#2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.</p> <p>#4. Apply a systematic approach to solve problems.</p> <p>#5. Use a variety of thinking skills to anticipate and solve problems.</p> <p>#7. Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>#9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>#10. Manage the use of time and other resources to complete projects.</p>										
Course Evaluation:	Passing Grade: 50%,										
Evaluation Process and Grading System:	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Assignments</td> <td>15%</td> </tr> <tr> <td>Lab Tests</td> <td>30%</td> </tr> <tr> <td>Lecture Tests</td> <td>40%</td> </tr> <tr> <td>Participation</td> <td>15%</td> </tr> </tbody> </table>	Evaluation Type	Evaluation Weight	Assignments	15%	Lab Tests	30%	Lecture Tests	40%	Participation	15%
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Books and Required Resources:	Freshwater Fishes of Canada by Scott, W.B. and E.J. Crossman										



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The ROM Field Guide to Freshwater Fishes of Ontario by Holm, E, N. Mandrak and M. Burrige

Course Outcomes and Learning Objectives:

Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will acquire varying levels of skill development relevant to the following learning outcomes:

Course Outcome 1.

Identify freshwater fishes from the Great Lakes basin to the family level based on taxonomic characteristics. Locate and identify internal and external anatomical features of Great Lakes fishes.

Learning Objectives 1.

- 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 for identification to family level

Course Outcome 2.

Identify freshwater fishes from the Great Lakes basin to the species level based on taxonomic characteristics.

Learning Objectives 2.

- identify to species Ontario's important sports and commercial fishes
- correctly identify to species juvenile Salmonids and larval Lamprey found in Ontario
- demonstrate effective use of a bifurcated (dichotomous) fish key for identification to species level

Course Outcome 3.



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Demonstrate an understanding of the morphological and physiological adaptations of freshwater fishes to the aquatic environment.

Learning Objectives 3.

- 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 function of external/internal structures and basic physiology of a generalized fish including respiration, circulation, buoyancy and thermal regulation, osmoregulation, growth, nervous and endocrine systems and reproduction
- differentiate between anadromous and catadromous fishes, giving examples of each
- discuss the various reproductive strategies of fish and their relative success

Course Outcome 4.

Outline the biology and ecology of selected freshwater fishes of Ontario

Learning Objectives 4.

- discuss the stages of fish development from egg to adult
- demonstrate an understanding of terminology specific to the Salmon family and to the Lamprey family
- summarize the biology of significant Ontario fish species based on classification, range, description, habitat, food habits, reproduction and importance.
- outline the life cycle and discuss the importance of common parasites in Ontario

CICE Modifications:

Preparation and Participation

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will



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always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

A. Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor.

B. Tests may be modified in the following ways:

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues.
4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

C. Tests will be written in CICE office with assistance from a Learning Specialist.

The Learning Specialist may:

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

D. Assignments may be modified in the following ways:

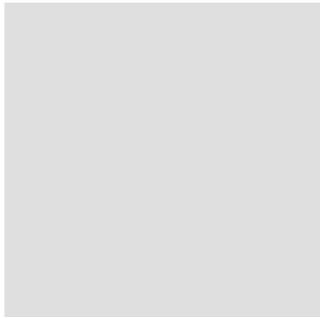
1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

The Learning Specialist may:

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional



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time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

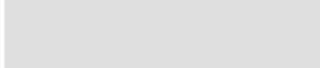
E. Evaluation:

Is reflective of modified learning outcomes.

NOTE: Due to the possibility of documented medical issues, CICE students may require alternate methods of evaluation to be able to acquire and demonstrate the modified learning outcomes

Date:

Wednesday, September 6, 2017



Please refer to the course outline addendum on the Learning Management System for further information.