

I. COURSE DESCRIPTION:

This course will provide the biological background for management of wetland habitats, emphasizing aquatic community component identification, biology and management. Students will learn how to evaluate wetlands, assess their limitations, and research and design a plan for their enhancement to optimize recreational, social, aesthetic and economic values.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the CICE student with the assistance of a Learning Specialist, will demonstrate the ability to:

1. Compare the classes of wetlands in Canada, and the ecological characteristics of each class.
 - Potential Elements of the Performance:
 - Research the classes of wetlands from reference material
 - Summarize 4 characteristics of each wetland class
 - Describe the values of each wetland class and potential reasons for wetland loss
 - ***This outcome will constitute approximately 10% of final grade***
2. *Identify and discuss the role of the biological component of wetlands.*

Potential Elements of the Performance:

- Review written reports on the role of indicator species in wetlands (from "readings" study manual) and complete response sheets
- Using actual specimens, study skins, slides or visual materials, identify indicator species of amphibians, reptiles, macro-invertebrates, aquatic plants, birds and mammals commonly found in wetlands.
- Fill in the data sheet assignment (from study manual) to describe the identifying features, sites and roles of the above species.
- ***This outcome will constitute approximately 30% of final grade***

3. *Evaluate and submit a written assessment form for one or more local wetland(s) by the Environment Canada/ Ministry of Natural Resources "Ontario Wetland Habitat Evaluation" survey technique.*

Potential Elements of the Performance:

- Review the procedures described in the Ontario Wetland Habitat Evaluation manual (Northern Region)
 - Perform a field survey of a local wetland using the above procedure Complete the maps and forms required for this survey after returning to the College
 - Compare the Ducks Unlimited wetland evaluation and other wetland evaluation systems to this survey in terms of methodology, time requirements and results.
 - ***This outcome will constitute approximately 25% of final grade***
4. *Compare physical, chemical, and biological methods of vegetation management in wetlands in terms of methods of application, economic and ecological costs and public acceptance*

Potential Elements of the Performance:

- Review the assigned readings on vegetation management, and discuss why vegetation and vegetation control may constitute a problem to managers
 - In an in-class presentation and Q & A session
 - Discuss and rate the advantages of the methods of physical vegetation control
 - Discuss and rate the advantages of the methods of chemical vegetation control.
 - Discuss and rate the advantages of the methods of biological vegetation control.
 - Prepare a chart to summarize the above
 - ***This outcome will constitute approximately 10% of final grade***
5. ***Discuss the merits and drawbacks of various methods of water-level control.***

Potential elements of the performance:

- Review the assigned readings to assess the purpose and types of water level manipulation and control
- Discuss in class the relative merits and draw-backs of various control devices
- ***This outcome will constitute approximately 10% of final grade***

6. ***Develop a wetland evaluation / management plan designed to improve an existing wetland for waterfowl, fur-bearers and resource users.***

Potential elements of the performance:

- Select a local wetland that requires a management plan, with the assistance of the Ministry of Natural Resources.
- Prepare field maps of the area
- On the site, do a complete inventory of biotic and abiotic features of importance
- Map aquatic vegetation communities by the prescribed methods
- Perform a complete wetland habitat evaluation by an approved methodology
- Assess limitations of the wetland and how these limitations could be overcome by proper management
- Summarize the above information in an appropriate professional report that can be submitted to the Ministry of Natural Resources to further their knowledge about the wetland.
- ***This outcome will constitute approximately 15% of final grade***

III. TOPICS:

1. Wetlands and their roles in Ecosystems
2. Biological components of Wetlands
3. Wetland losses
4. Wetland evaluation
5. Water level control
6. Vegetation management
7. Habitat improvement for game and non-game wildlife

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. *Wetland Management course manuals*. There are 3 parts:
 - a. Study Guide
 - b. Readings in Wetland Management
 - c. Laboratory Manual
2. MacCulloch, R.D., 2002. *The Royal Ontario Museum Field Guide to Amphibians and Reptiles of Ontario*. McClelland and Stewart Ltd. Toronto, Ontario. 168 pp.
3. Newmaster, S., 1997 *Wetland Plants of Ontario*. Lone Pine Publishing.
4. Field Guide – Amphibians and Reptiles
5. Field Guide – Wetland Birds

RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY

1. Bellrose, F.C., 1980. Ducks, Geese and Swans of N.A., 3rd E., Stackpoke, Penn. 540 pp.
2. Bookhout, T.A., E. 1994, Research and Management Techniques for Wildlife and Habitats, Fifth ed., The Wildlife Society, Bethesda, Md., 740 pp.
3. Linde, A.F., 1969. Techniques for Wetland Management. Department of Natural Resources, Madison, Wisconsin. 156 pp.
4. Rue, L.L. III, 1980. Fur-bearing Animals of North America. Crown publ. N.Y. 343 pp.
5. U.S.D.I. 1988-1994. Waterfowl Management Handbook. U.S. Department of the Interior, Washington, D.C. Series of Fish & Wildlife leaflets.

V. EVALUATION PROCESS/GRADING SYSTEM:

Evaluation Process:

Quizzes	- 6%
Assignments	- 10%
Technical report	- 10%
Term tests based on theory	- 35%
Wetland evaluation summary/maps	- 15%
Practical tests	- 24%
	<u>100%</u>

Practical test marks will be based on the following:

1. Aquatic vegetation (6%)
2. Wetland bird I.D. and calls (6%)
3. Reptile and amphibian I.D. and calls (6%)
4. Marsh monitoring (6%)

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:

Disability Services:

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 professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 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.

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*. 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 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.

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

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

A. 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.

B. 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.

C. 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 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

D. Evaluation:

Is reflective of modified learning outcomes.