COURSE OUTLINE: NET210 - WETLAND CONSERVATION

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Course Code: Title	NET210: WETLAND CONSERVATION
Program Number: Name	5214: FISH/WILD CONSERVATN 5220: NAT ENVIRONMENT TN 5221: NAT ENVIRONMENT TY
Department:	NATURAL RESOURCES PRG
Semesters/Terms:	18F
Course Description:	This course provides the biological background for conservation and management of wetland habitats, emphasizing aquatic community component identification, biology and structure. Students will learn how to identify and differentiate many types of wetlands and categorize them based on their structure. Means by which wetlands are afforded protection will be explored, including conservation limitations, and enhancement to optimize recreational, social, aesthetic and economic values. Steps in the Ontario Wetland Evaluation System process will be completed through both in-field and in-class activities.
Total Credits:	3
Hours/Week:	3
Total Hours:	45
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Substitutes:	NRT259
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**5214 - FISH/WILD CONSERVATN** VLO 1 Demonstrate clear, concise and industry appropriate written, spoken and visual communication skills VLO 2 Identify, discuss, organize and assess common flora and fauna species found throughout Ontario, including biological characteristics VLO 3 Demonstrate the ability to follow standardized protocols to collect field data on fish and wildlife populations in a variety of weather and site conditions. VLO 4 Demonstrate the correct use of standard laboratory equipment and skills required to carry out experiments and study various organisms. VLO 6 Understand the importance of managing fish and wildlife resources in Ontario and related federal, provincial and municipal legislation. VLO 9 Safely operate and maintain equipment used in Fish and Wildlife Conservation. VLO 10 Evaluate and apply current technologies and mathematical concepts used to collect, manage and analyze data. VLO 11 Analyze, evaluate and apply subjective and objective safety considerations. **5220 - NAT ENVIRONMENT TN** VLO 1 Collect data from representative biological and environmental samples using routine test procedures.

	VLO 2	Utilize natural resources equipment and technology to accurately identify ecosystem components for purposes of conserving and managing natural resources.
	VLO 3	Apply the basic concepts of science to natural resource conservation and management.
	VLO 4	Conduct natural environment assessments according to standard field survey methods, including the use of appropriate equipment and materials.
	VLO 5	Recommend eco-site conservation and management strategies through the classification of ecosystem components.
	VLO 6	Practice principles and ethics associated with natural resource conservation and management issues.
	VLO 7	Work safely in adherence to occupational health and safety standards.
	VLO 8	Complete all work in compliance with applicable municipal, provincial and federal standards and guidelines.
	VLO 9	Contribute to the implementation of natural resource conservation and management.
	VLO 11	Communicate technical information accurately and effectively in oral, written and visual forms.
	VLO 13	Apply awareness of global environmental issues to conservation and management of natural resources.

5221 - NAT ENVIRONMENT TY

	VLO 1	Collect, analyze, interpret and report on data from representative biological and environmental samples.
	VLO 2	Utilize natural resources information technology equipment to assemble, analyze and present identified ecosystem components for purposes of conserving and managing natural resources.
	VLO 3	Apply the basic concepts of science to natural resource conservation and management.
	VLO 4	Plan, design, implement and participate in the maintenance of natural environment assessments.
	VLO 6	Practice principles and ethics associated with natural resource conservation and management issues.
	VLO 7	Ensure all work is safely completed in adherence to occupational health and safety standards.
	VLO 10	Communicate technical information accurately and effectively in oral, written, visual and electronic forms.
	VLO 11	Develop and present strategies for ongoing personal and professional development to enhance performance as an environmental technologist.

Essential Employability Skills (EES) addressed in this course:	EES 1	Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
	EES 2	Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 5	Use a variety of thinking skills to anticipate and solve problems.
	EES 6	Locate, select, organize, and document information using appropriate technology and information systems.
	EES 7	Analyze, evaluate, and apply relevant information from a variety of sources.

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	EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
	EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10 Manage the use of time and other resources to complete projects.
	EES 11 Take responsibility for ones own actions, decisions, and consequences.
General Education Themes:	Civic Life Science and Technology
Course Evaluation:	Passing Grade: 50%, D

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Compare the classes of wetlands in Canada, and the ecological characteristics of each class.	1.1 Research the classes of wetlands from reference material. 1.2 Differentiate wetland types and summarize characteristics of each, including hydrological and sediment criteria. 1.3 Describe the values of wetlands and identify the major reasons for wetland loss. 1.4 Identify wildlife habitat enhancement features including nesting structures for marsh birds. 1.5 Review waterfowl ecology and management and recognize the role wetlands play in their conservation.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Identify and discuss the role of biological components of wetlands including indicator species.	2.1 Identify indicator species commonly found in wetlands using actual specimens and/or visual materials. 2.2 Associate wetland dwelling species such as amphibians, reptiles, aquatic plants, marsh birds, and mammals to their habitats and roles. 2.3 Access and interpret literature pertaining to management aspects of wetlands including flora, invertebrates, marsh birds and mammals. 2.4 Examine different methods for surveying wetland species.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Perform steps involved in completing an assessment of a local wetland and submit a written wetland evaluation using the Ministry of Natural Resources Ontario Wetland Evaluation System.	3.1 Review the procedures described in the Ontario Wetland Evaluation System (Northern Manual). 3.2 Conduct a field survey of a wetland using the OWES procedure focusing on the Biological, Social, Hydrological and Special Feature Components. 3.3 Organize and record complete, detailed accurate and neat documentation of field activities on the provided forms. 3.4 Apply knowledge of Geographical Information System (GIS) to delineate vegetation communities in order to determine total wetland size and fractional areas of individual communities as required for scoring the wetland. 3.5 Compare and contrast an evaluation of a local provincially significant wetland to the wetland assessed by the student.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Compare physical, chemical, and biological	4.1 Review the assigned readings and case studies on

methods of vegetation management in wetlands in terms of methods of application, economic and ecological costs and public acceptance.	vegetation management. 4.2 Theorize why vegetation and vegetation control may constitute a problem for managers. 4.3 Evaluate the advantages/disadvantages of the methods of physical, chemical, and biological vegetation management.
Course Outcome 5	**Learning Objectives for Course Outcome 5**
Discuss structures and methods of water-level control for the conservation and enhancement of wetland productivity.	5.1 Identify types of water level manipulation devices, discussing the purpose and function of each. 5.2 Describe the ecological effects of implementing the use of water-level control structure, with emphasis on vegetation and benthic communities. 5.3 Explain how water control structures are used for biological vegetation control.
Course Outcome 6	**Learning Objectives for Course Outcome 6**
Research issues and planning initiatives in wetland conservation, rehabilitation and restoration.	6.1 Locate and use literature, media and electronic resources to prepare a wetland profile report or case study. 6.2 Summarize planning efforts and legislation in place to mitigate wetland loss and afford protection.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight	Course Outcome Assessed
Assignments	45%	all
Exams	30%	all
Quizzes	25%	all

Date: June 19, 2018

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