

Trent University
Environmental and Resource Studies Program

ERSC 3510H. ECOLOGY AND MANAGEMENT OF WETLAND SYSTEMS

2010-11 Fall

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Lectures: *Weekly.* Fridays 9:00-10:50, GCS 115

Field Exercises: *Fortnightly* Fridays 11:00-16:50 (approximately). From Sept. 24 – Oct. 15 half of the class will take part in each field exercise. On Oct. 22 (*the Friday before Reading Break*) the whole class will take part. That particular class will begin as a field trip at 9:00 and will end early (no separate lecture – any lecturing will be done during the field trip, which should end at about 2:00). For field trips, meet in the parking lot behind the Environmental Sciences Building. Dress appropriately.

Workshops: *Weekly* Fridays 11:00-12:30, 1:00-2:30. Oct. 31 – Dec. 3, ESC A202

Textbook: Keddy, Paul. A. 2010. *Wetland Ecology: Principles and Conservation*. Cambridge. 2nd Ed., University Press: Cambridge.

Additional reference material will be posted on WebCT as the course progresses.

Note: A supplementary fee of \$20 will be required for field trips.

COURSE CONTENT

This course is about the ecology and management of wetland ecosystems and the resources that they contain. It is a case study in ecosystem management. Wetlands being transitional zones between terrestrial and aquatic systems, the ecological lessons and management approaches can have broader relevance in those systems. Nevertheless, the study of wetlands is valuable in its own right -- wetlands covering about 15% of Canada.

Wetlands tend to be characterized by comparatively high physical and/or biological activity within their regions. They are also very sensitive to certain types of disturbance and well-adapted to others. They contain culturally important resources, but are also widely unappreciated and perceived as hazards. Effective ecological management of wetland systems involves applied research, monitoring of key components, regulation of human activity, mitigation of adverse impacts, protection of ecological processes, rehabilitation of degraded resources and other activities.

The course addresses three major components of wetland ecology and management:

- A. Ecological processes and resource attributes, inventory and evaluation.**
- B. Management institutional framework and policy.**
- C. Planning and acting.**

ASSIGNMENTS AND GRADING

Peatland interpretation report	25%
Wetland evaluation/inventory report	25%
Workshop participation	10%
Restoration/protection prospectus	25%
In-class quiz	15%
Total	100%

High grades are given for original, relevant, concise, organized, accurate and judicious work. Late assignments will be penalized by **5%** per weekday late. A revised deadline for written material **may be negotiated** with the course instructor **until 7 days before the deadline**. Written approval of the instructor (not the TA) must be submitted with the assignment. Normally this approval can be obtained by e-mail. Persons selecting this option should be especially patient about the time taken for grading. Extensions for longer than 2 weeks will not be granted.

Academic Integrity

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from a 0 grade on an assignment to expulsion from the University. Definitions, penalties and procedures for dealing with plagiarism and cheating are set out in Trent University's *Academic Integrity Policy*. You have the responsibility to educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more: www.trentu.ca/academicintegrity.

Deadlines

Exercise	Assigned	Due
Peatland interpretation	Sept 24, Oct 1	Oct. 8, 15
Wetland evaluation/inventory	Oct 8, 15	Oct. 22, 29
In-class quiz (3/4 hour)	Nov. 12	Nov. 12
Prospectus	Oct. 22	Dec. 3

Access to Instruction

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and/or health consideration and feels that she/he may need accommodations to succeed in this course, the student should contact the Disability Services Office (BL

Suite 109, 748-1281, disabilityservices@trentu.ca) as soon as possible. Complete text can be found under Access to Instruction in the Academic Calendar.

LECTURE, FIELD TRIP AND WORKSHOP SCHEDULE

Sept. 17	Lecture	Introduction. Wetland terminology, types, context.
Sep. 24, Oct. 1	Field	Peat and peatland formation
Sept. 24	Lecture	Wetland formation: hydrology, production, decomposition
Oct. 1	Lecture	Ecologic development: vegetation and disturbance
Oct. 8	Lecture	Wetland classification, inventory and evaluation
Oct. 8, 15	Field	Wetland evaluation/inventory
Oct. 15	Lecture	Competition, cooperation, diversity and production
Oct. 22	Lecture/field	Protection and restoration contexts
Oct. 29	READING BREAK	
Nov. 5	Lecture	Assembly rules and implications
	Workshop	Stress, function and restoration indicators
Nov. 12	In-class quiz	
	Workshop	Protection/restoration project planning
Nov. 19	Lecture	Government planning, regulation, global agreements.
	Workshop	Ontario Municipal Board case study
Nov. 26	Lecture	Wetland creation and wastewater treatment wetlands
	Workshop	Wetland mitigation
Dec. 3	Lecture	NGO's and citizen roles
	Workshop	Public good and private gain
Dec. 10	Lecture	Bridge to ERSC 4520H and ERSC 3160H

SUGGESTED READINGS FROM THE TEXT (Keddy 2010)

Note that supplementary readings will be made available on Reserve in Bata Library, particularly for the material that will be covered in November and some of the field/workshop exercises. A bibliography of these will be distributed in class.

Sept. 17 Chapter 1

Sept. 24	Chapter 2, 3, part of 9, supplementary
Oct. 1	Chapters 4, 10
Oct. 8	Chapters 1, 11
Oct. 15	Chapters 5, 6, 7, part of 9
Oct. 22	Chapters 13, parts of 14
Nov. 5	Chapters 8, 11, parts of chapters already read, esp. 14.8
Nov. 12	Chapters 12.7, 13.3, 14.3, supplementary
Nov. 19	Supplementary
Nov. 26	Chapter 14.7, supplementary
Dec. 3	Supplementary

SOME REFERENCE PUBLICATIONS

- Bardecki, M.J. and N.J. Patterson. 1989. *Wetlands: inertia or momentum?*
- Crow, G.E. and C.B. Hellquist. 2000. *Aquatic and wetland plants of northeastern North America. Volume 1. Volume 2*
- Cronk, J.K. and M. S. Fennessy. 2001. *Wetland plants: biology and ecology*
- Etherington, J.R. 1983. *Wetland ecology*
- Hammer, D.A. ed. 1989. *Constructed wetlands for wastewater treatment: municipal, industrial and agricultural*
- Hammer, D.A. 1992. *Creating freshwater wetlands*
- Hartig, J.H. and M.A. Zarull. 1992. *Under RAPs: towards grassroots ecological democracy in the Great Lakes basin*
- Kadlec, R.H. and R.L. Knight. 1996. *Treatment wetlands*
- Karr, J.R. and E.W. Chu. 1999. *Restoring life in running waters*
- Keddy, P.A. 2010. *Wetland ecology: principles and conservation (Text)*
- Kent, D.M. ed. 2001. 1994. *Applied wetlands science and technology*
- Kentula, M.E. et al. 1992. *An approach to improving decision making in wetland restoration and creation*
- Kusler, J.A. and M.E. Kentula. 1990. *Wetland creation and restoration: status of the science*
- Mansell, D. et al. 1998. *Temperate wetlands restoration guidelines*
- Mansell, D. et al. 2004. *Guide to the restoration of wetlands and watershed health*
- Mansell, D. et al. 2004. *A tale of two rivers: the development of wetland and watershed restoration concepts*
- Marble, A.D. 1992. *A guide to wetland functional design*
- Middleton, B. 1999. *Wetland restoration: flood pulsing and disturbance dynamics*
- Mitsch, W.J. and J.G. Gosselink. 2007. *Wetlands*
- Mitsch, W.J., J. G. Gosselink, C.J. Anderson and L. Zhang. 2009. *Wetland ecosystems*
- National Research Council (U.S.). 1992. *Restoration of aquatic ecosystems: science, technology and public policy*
- National Wetlands Working Group. 1988. *Wetlands of Canada*

- Newmaster, S.G., A.G. Harris and L.J. Kershaw. 1997. *Wetland plants of Ontario*
- Payne, N.F. 1992. *Techniques for wildlife habitat management of wetlands*
- Phyfer, J.D. and B. Ibbotson. 2003. *The handbook of environmental compliance in Ontario*
- Radar, R.B., D.P. Batzer and S.A. Wissinger. 2001. *Bioassessment and management of North American Freshwater Wetlands*
- Richarson, J.L. and M.J. Vepraskas. 2001. *Wetland soils: genesis, hydrology, landscapes and classification*
- Rubec, C.D.A. and R.P. Overend eds. 1987. *Proceedings – Symposium ,87 Wetlands/Peatlands*
- Williams, M. (ed.). 1990. *Wetlands: a threatened landscape*
- Scholarly journals: *Wetlands*
Canadian Journal of Fisheries and Aquatic Sciences
Restoration Ecology
Ecological Restoration