

TRENT UNIVERSITY
Course Syllabus

***ERSC-BIOL 2700: Environmental Science for Teacher Education
Fall and Winter sessions 2010-11***

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COURSE DESCRIPTION

This course will provide the fundamental principles of environmental science to education students lacking a basic science background. The topics covered will be related to the educational objectives of the Ontario elementary school curriculum, and students will have the opportunity to teach these concepts to primary and junior pupils (Grades 1-6). The course will include labs, fieldwork, seminars and workshops. This course may be used as a 100-level science course for the science requirement of ERS Arts majors.

TIMETABLE

	<u>Day</u>	<u>Time</u>	<u>Location</u>
Lecture*	Thursday	09:00-10:50	GCS 103
Lab/Seminar/Workshop			
Section A	Thursday	12:00-13:50	ES A202
Section B	Thursday	14:00-15:50	ES A202

**Note that most lecture periods are only 1 ½ hours long*

REQUIRED TEXT

- Environmental Science: Earth as a Living Planet, Canadian edition (Botkin, D. B. & E. A. Keller)
- ERSC-BIOL 2700 reprotex (available from the Trent Bookstore)
- The Ontario Curriculum Grades 1-8: Science and Technology revised (2007) version (Ont. Ministry of Education & Training); hard copy provided or can be downloaded from myLearningSystem

GRADING SCHEME

	<u>Value (%)</u>	<u>Due date*</u>
Lab & workshop reports (2 @ 10%)	20	see schedule
Practicum 1 (envir. science exhibit; presentation and written report)	20	Dec. 2
Practicum 2 (envir. science lesson in workshop format; presentation and report)	20	Mar. 17
Midterm exam	15	-
Final exam	25	-

*Assignments are expected to be handed in on or before the due date. Extensions can be given for good cause, but these must be requested one week or more in advance of the due date (except for documented illnesses). The late penalty is 5% of the assignment value per day.

READINGS

Readings listed in the course schedule are required, unless otherwise noted. You will get a lot more out of the readings if you keep to the schedule provided in this syllabus!

LABS & WORKSHOPS

Labs and workshops provide a hands-on component to the course and are especially useful for both enhancing your knowledge and understanding of environmental science and providing ideas and material for future elementary school teaching. Two of these require written reports, but students are expected to attend all of them, and material from these activities will be used in the midterm and final exams. Students will be able to choose which of two labs to write up in the fall term (Schoolyard Naturalization or Using the Arts to Enhance Environmental Science Education).

Several labs and workshops take place outdoors and involve a range of physical activities, so dress appropriately. Wear long pants and sneakers (or at least comfortable shoes, but not sandals) with socks, and be prepared for inclement weather. We will provide any other items you need for the activity. NOTE: THERE IS A POSSIBILITY THAT YOU WILL ENCOUNTER POISON IVY AT SOME OF THE SITES, SO PLEASE WEAR LONG PANTS AND MAKE SURE YOUR LEGS AND FEET ARE COVERED!

PRACTICUM 1: ENVIRONMENTAL SCIENCE EXHIBIT

Students will work in small groups (3-4 individuals per group) to develop an exhibit on an environmental science topic relevant to the Ontario Curriculum. Although aimed at one particular grade, the exhibit should be designed to inform, involve and stimulate the interest of primary and junior students across as broad a range of grades as possible. There will be time allotted in the lab period for practicum work and feedback, and students will present their exhibit concept to the class (see schedule). The exhibits will be presented to elementary students at the end of November. NOTE THAT THE EXHIBITION MAY OCCUR ON A DAY WHEN THE CLASS DOES NOT NORMALLY MEET, AND IT WILL EXTEND BEYOND REGULAR CLASS HOURS. A written report will be prepared on the exhibit by each participant. Grades for this practicum will be assigned on the basis of the exhibit and a written report.

PRACTICUM 2: ENVIRONMENTAL SCIENCE CLASSROOM WORKSHOP

Students will again work in groups (4-5 individuals per group) to develop a lesson on an environmental science topic relevant to the junior curriculum. The lesson should supplement the Ontario Curriculum objectives of the particular topic; in other words, extend what was learned in the classroom. It should be in "workshop" format, and should include interesting and informative interactive elements. There will be time allotted in the lab period for practicum work, and students will run their workshop on Grade 4, 5 or 6 students. The workshops will be scheduled at the beginning of March at Camp Kawartha. NOTE THAT THE WORKSHOP DAY WILL RUN BEYOND REGULAR CLASS HOURS.

A written report will be prepared on the workshop by each participant. Grades will be assigned on the basis of the written report and an evaluation of the workshop presentation.

MIDTERM AND FINAL EXAMS

These exams will integrate material from lectures, workshops, lab activities and readings. The exams will consist of short answer, medium answer and essay questions.

ACADEMIC INTEGRITY

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offense and carries penalties varying from failure in an assignment to suspension 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 a 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.

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 he/she 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.

SCHEDULE

FALL TERM

Week	Date	Session	Topic	Readings
1	Sept. 16	Lecture	Course Introduction (MF, JR)	
	Sept. 16	Wkshp/ field lab	No lab this week	
2	Sept. 23	Lecture	Locating environmental science in the revised Ontario curriculum (JR)	Curriculum document
	Sept. 23	Lab	The role of simulation games in environmental science (JR). Meet at Camp Kawartha Environmental Centre	Handout
3	Sept. 30	Lecture	Scientific reasoning and critical thinking (MF)	Ch. 1 & 2
	Sept. 30	Field trip	Using proximate nature to teach environmental science (JR). Outdoor classroom in action at Edmisson Heights Public School with Drew Monkman	Handout Reprotext: Articles 5, 6, 10
4	Oct. 07	Lecture	Ecosystems (MF)	Ch. 6 & 9
	Oct. 07	Field trip	Schoolyard naturalization and a visit to the Ecology Park (MF). Assignment due Oct. 21.	Handout
5	Oct. 14	Lecture	Environmental pollution overview (MF)	Ch. 15
	Oct. 14	Wkshp	Using the arts to enhance environmental science education (JR). Assignment due Nov. 4.	Handout
6	Oct. 21	Lecture	Water pollution (MF)	Ch. 19
	Oct. 21	Lab	Water chemistry lab (DH)	Handout
-	Oct. 28	-	Reading Week; no classes	
7	Nov. 04	Lecture	Environmental understanding: a human developmental perspective (JR)	Reprotext: Articles 1- 3
	Nov. 04	Lab	Practicum I: developing an environmental science exhibit (MF, JR). Written practicum report due Dec 2.	Handout
8	Nov. 11	Lecture	Energy concepts (MF)	Ch. 16
	Nov. 11	Wkshp	Practicum I group meetings (MF)	

9	Nov. 18	Lecture	Energy and the environment, fossil fuels, nuclear energy, alternative energy sources (MF). Film: Lovins on the soft path.	Ch. 15
	Nov. 18	Wkshp	Practicum I in-class concept presentations (MF, JR)	
10	Nov. 25	Lecture	No lecture this week	
	Nov. 25	Practicum	Environmental Science Exhibition (Practicum I).	
11	Dec. 02	Lecture	Atmospheric processes and climate (MF). Film: Arctic Mission: Climate on the Edge (NFB, 2005).	Ch. 20
	Dec. 02	Wkshp	Setting up and managing an environmental classroom (JR)	Handout
12	Dec. 09	Lecture	Climate change (MF)	Ch. 20
	Dec. 09	Wkshp	Midterm review (MF)	
-	TBA	Exam	Midterm Exam & Winter Vacation	

WINTER TERM

13	Jan. 13	Lecture	Midterm exam review. Biodiversity & biogeography (CD)	Ch. 7 & 8
	Jan. 13	Lab	Environmental contamination (CD)	Handout
14	Jan. 20	Lecture	Biodiversity and biogeography, cont'd (CD)	
	Jan. 20	Lab	No lab this week	
15	Jan. 27	Lecture	Environmental toxicity (DH)	Ch. 15
	Jan. 27	Lab	Completion of environmental contamination lab. Assignment due Feb. 10.	
16	Feb. 03	Lecture	Environmental teaching strategies (JR)	Reprotext: Articles 4 & 9; Handout
	Feb. 03	Wkshp	Practicum II: developing an environmental science workshop (CD, JR). Written practicum report due Mar 10.	
17	Feb. 10	Lecture	Using the relationship of science to technology, society and the environment (STSE) to plan an integrated environmental unit (Professor Fiona White, Coordinator of the Queen's-Trent Concurrent Education Program)	
	Feb. 10	Wkshp	Practicum II group meetings (CD)	
18	Feb. 17	Lecture	Solid waste production and management (CD)	Ch. 24
	Feb. 17	Wkshp	Practicum II in-class concept presentations (CD, JR)	Handout
-	Feb. 24	-	Reading Week; no classes	
19	Mar. 03	Lecture	No lecture this week	

	Mar. 03	Practicum	Environmental science workshops (Practicum II) at Camp Kawartha (all day)	
20	Mar. 10	Lecture	Practicum II debriefing. Biogeochemical cycles (CD)	Ch. 5
	Mar. 10	Lab	No lab this week	
21	Mar. 17	Lecture	Soils and Erosion (CD)	TBA
	Mar. 17	Lab	Soils lab (CD)	Handout
22	Mar. 24	Lecture	Air pollution (CD)	Ch. 21 & 22
	Mar. 24	Lab	Local food and schoolyard food gardens (CD)	Handout
23	Mar. 31	Lecture	The urban environment from an environmental systems perspective (CD)	Ch. 26
	Mar. 31	Lab	No lab this week	
24	Apr. 07	Lecture	Community initiatives in environmental protection and remediation (CD). Course review and evaluation.	Handout
	Apr. 07	Wkshp	Review session for final (CD)	