



**TRENT SCHOOL OF THE ENVIRONMENT**  
**ERST-POST 2100H - Environmental Science and Politics**  
 Winter 2019

**Instructor:** Stephen Bocking  
**Office:** ESB A132  
**Phone:** 705-748-1011, x7883  
**Email:** [SBocking@trentu.ca](mailto:SBocking@trentu.ca)  
**Office hours:** Monday 11:00 – 13:00, Wednesday 11:00 – 13:00

**Teaching assistants:** Matthew Legrand, [matthewlegrand@trentu.ca](mailto:matthewlegrand@trentu.ca)  
 Rebecca Spence, [rebeccaspence@trentu.ca](mailto:rebeccaspence@trentu.ca)  
 Mystaya Touw, [mystayatouw@trentu.ca](mailto:mystayatouw@trentu.ca)

**Administrative Assistant:** Mary O'Grady, ESB C204, 705-748-1011, x7199  
[maryogrady@trentu.ca](mailto:maryogrady@trentu.ca)

**Course times and locations:**

Lecture:	Wednesday	8:00 – 9:50	OCA 203
Seminars:	Wednesday	15:00 – 15:50	CCW A2
	Thursday	15:00 – 15:50	CCN I1
	Thursday	10:00 – 10:50	OCA 104
	Thursday	11:00 – 11:50	SC W4
	Thursday	16:00 – 16:50	CCN I1

**What this course is about**

Much of our awareness about the environment, and about environmental issues, comes to us through science. This fact is reflected in the many courses in environmental science offered by the TSE, and in the research programs of TSE scientists. By estimating the effect of fishing on fish stocks, or by assessing the risks involved in using toxic chemicals, or by predicting the consequences of global climate change (to note a few examples), science helps us to identify the impacts of human activity on the world, and some of the means by which these impacts can be moderated.

But the appropriate role of science in environmental politics is also often a matter of debate. Several issues are evident, such as: What is to be done when scientific information is uncertain, or when "the experts" disagree? What is the difference between matters of science, and matters of politics, and who should make this distinction? How can we use science, while also making

sure that all interests in society are considered in environmental policy? How do we relate science to other forms of knowledge, such as Indigenous knowledge? How might recent events, such as the emergence of "post-fact" politics (as illustrated by the behaviour of President Donald Trump) influence the roles of knowledge in environmental politics?

The purpose of this course is to examine these kinds of questions, and through these questions, to consider the relation of science to environmental policy and politics, both in terms of its role in helping to address environmental issues, and in terms of problematic aspects of this role.

This course is for students in both environmental science and environmental studies, as well as students in other majors, who want to understand better how science fits into the "real" worlds of politics and decisions. No prior experience in science is expected.

This course includes one two-hour lecture each week, and a seminar every second week. There are no seminars during the first week of classes. Attendance is required at every lecture.

### **Learning Outcomes**

At the conclusion of this course you should be able to meet the following objectives:

#### *Depth and breadth of knowledge*

- Demonstrate an understanding of the diverse forms of knowledge and styles of reasoning – scientific, public, and Indigenous – that are relevant to environmental issues;
- Exhibit a critical understanding of how scientific knowledge, arguments, and authority are used in environmental decisions and debates;
- Be able to place this understanding in the context of knowledge of how various institutions and interest groups define and respond to environmental challenges;
- Demonstrate an understanding of the most common roles of science in policy and politics, as seen in specific areas of resource and environmental policy, such as health and environmental risks, climate change, and resource management;

#### *Application of knowledge*

- Be able to apply the understanding of the political and social roles and implications of science gained in this course to analysis of contemporary environmental and resource issues;

#### *Communication skills*

- Demonstrate an ability to communicate information and interpretations regarding science and policy accurately and concisely, orally and in writing.

### **Course Assignments**

There is a preliminary assignment, short writing exercises (one for each class), a study project, a group presentation, reading questions, and a final exam.

The **preliminary assignment** is called "Identifying the Roles of Science". Identify an environmental issue for which science is relevant in some way. Find at least two articles in the recent media (magazines, newspapers, substantial blogs, less than two years old), that discuss this issue, and that include some mention of science. **When choosing articles, be sure that they are intended for a general audience, not for a scientific audience. Check with me if you are at all uncertain about whether your articles are appropriate.** Write a short paper (c. 500 words) discussing the roles of science in this issue (as presented in these articles). Consider, for example, the following aspects of these articles: What kinds of scientific knowledge are mentioned in these articles? How is this knowledge used to support particular arguments regarding preferred actions or policies? How is this information used to dispute claims made by other parties? This article is pass/fail, and is worth 5%.

The **short writing exercises** will give you an opportunity to discuss and describe briefly three key ideas and take-home points from each lecture. 10-15 minutes will be set aside at the end of each class for you to complete this exercise. Each exercise is worth 1.25%, and is due at the end of the class, with no exceptions. 12 exercises should be submitted by the end of the term. These exercises will receive a grade of either 1 (for acceptable submissions); or 1.25 (for more substantial or creative submissions).

In the **study project** you will examine a current issue in which science plays a role. A short list of issues, with relevant information sources, will be provided later in the term. These sources will include both background information and materials produced by groups that are involved in the issue. These materials are not necessarily objective (although they may present themselves as such); rather, they present particular arguments supporting one or another position relating to the issue. Your task is to examine these materials critically. This means understanding their purpose, their method of argument, their use of science, how they fit within the issue and/or controversy, and how they relate to themes and topics from the course. In other words, the purpose of this project is to give you practice in examining how people actually use science when discussing environmental issues, particularly when there is active controversy.

The **reading questions** (to be posted on Blackboard) will be based on course readings. It will be your responsibility to hand in written answers to 15 of these questions. Which 15 is up to you. 10 of these answers will be due on February 27, and the last five by April 3.

There is a penalty of 2% per weekday for all late written assignments.

The **group presentation** will consist of working as a team to present for 20-25 minutes on a selected topic in the seminar, and then lead the discussion afterwards. Groups will be organized in the first seminar.

The **final exam** will include questions based on the lectures and the reading material.

### Grading Scheme

First Assignment [due January 23]	5%
In-class exercises [due each week] 12 x 1.25%	15%
Seminar participation	5%

Group seminar presentation	10%
Study project [ <b>due March 20</b> ]	20%
Reading questions [ <b>10 due February 27; 5 due April 3</b> ]	15%
Final exam [ <b>in April exam period</b> ]	30%

(28% of the course grade will be returned before the Winter term drop date of March 8 2019.)

### **Quality of Written Work**

The ability to write clear, well organized, grammatical and properly documented academic papers is essential. I urge you to contact the Academic Skills Centre if you would like assistance in improving your writing skills. It would also be helpful to consult the Skills Centre's publications that discuss writing. Please feel free, as well, to consult with me about your writing. I like reading, and commenting on, draft papers.

### **Extensions Policy**

Extensions of deadlines for completion of assignments may be granted to students on the basis of illness, accident, or other extreme and legitimate circumstances beyond their control, or to help ensure that students are able to submit their best work. For consideration of extensions, please contact me as soon as possible.

### **The ERST-POST 2100H Environmental Policy**

I like to minimize the use of paper in this course. Accordingly, almost all written work is to be handed in via Blackboard. The only exception are the short writing exercises, due at the end of each class. I will also distribute this syllabus, assignments, lecture notes, information about the study project, reading questions, etc. through Blackboard.

### **Required Texts**

This course does not have a textbook. Various readings will be assigned, will be explained in class, and will be available on Blackboard. These readings will be essential for the seminars and the exam, and should be useful in preparing the study project. Please do your best to keep up-to-date with the readings.

### **University Policies**

Please see the Trent University academic calendar ([www.trentu.ca/calendar](http://www.trentu.ca/calendar)) for University Diary dates, Academic Information and Regulations, and University and departmental degree requirements. March 9, 2019 is the final date for withdrawal from Winter-term courses. After this date, students remain registered in Winter-term courses and will receive a final grade.

### **Academic Integrity**

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offense and carries penalties varying from a zero grade in 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 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](http://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 Student Accessibility Services Office (BH Suite 132, 748-1281, [accessibilityservices@trentu.ca](mailto:accessibilityservices@trentu.ca)) as soon as possible. Complete text can be found under Access to Instruction in the Academic Calendar.

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## **COURSE SCHEDULE**

**Section I: January 9: Introduction.** Syllabus, class mechanics, and some key issues about science.

**Section II: January 16: Science and environmental ethics.** What contribution can science make to our ideas and values concerning the environment?

- David Schindler, [Interview], *Alternatives Journal*, 2010, 38(5)
- Stephen Bocking, "Leopold's Challenge," *Alternatives Journal*, 2009, 35(4): 13-17
- Aldo Leopold, "Thinking Like a Mountain" (from *A Sand County Almanac*)
- Rachel Carson, *Silent Spring*. (excerpts)
- Jay Odenbaugh, "Advocacy, Ecology, and Environmental Ethics," *Nature Education Knowledge*, 2012, 3(10): 8

**Section III: January 23 & 30: Science and natural resources management.** What is the role of science in the use, management, and protection of natural resources?

- Bocking, "Science in Natural Resources Management," Chapter 4 in *Nature's Experts: Science, Politics and the Environment* (Rutgers University Press, 2004);
- Waldman, J., "How Norway and Russia Made a Cod Fishery Live and Thrive" (*Yale Environment* 360, 2014).
- Vivian M. Nguyen et al., "A Roadmap for Knowledge Exchange and Mobilization Research in Conservation and Natural Resource Management," *Conservation Biology*, 2016, 31(4): 789-798.
- David C. Rose, "The Case for Policy-Relevant Conservation Science," *Conservation Biology*, 2014, 29(3): 748-754.

**Section IV: February 6: Case study of science & environmental policy: salmon farming.**  
How is science used in public debate and controversy about an environmental issue?

**Section V: February 13: Science & Indigenous Knowledge in northern Canada.** How has science addressed environmental & natural resource problems in northern Canada, and how does science relate to Indigenous Knowledge?

**<< Reading Week >>**

**Section VI: February 27 & March 6: Science and risk.** Faced with a multitude of potential environmental hazards and risks, from pesticides to electromagnetic fields, how do we determine which should be of highest priority?

- Alexandra Morton and Richard Routledge, "Risk and precaution: Salmon farming," *Marine Policy*, 2016, 74: 205-212
- Anna Maria Barry-Jester, "What Went Wrong In Flint" *FiveThirtyEight*, January 26, 2016
- Mitch Smith, "As Flint Fought to be Heard, Virginia Tech Team Sounded Alarm" *The New York Times*, February 6, 2016
- Andrew Nikiforuk, "Did Alberta Just Break a Fracking Earthquake World Record?" *The Tyee*, January 29, 2015
- Danny Hakim, "This Pesticide is Prohibited in Britain. Why is it Still Being Exported?" *The New York Times*, December 20, 2016.

**Section VII: March 13 – 20: Science and the international environment.** How can science contribute to addressing regional and global problems, such as climate change?

- Nicola Jones, "How the World Passed a Carbon Threshold and Why It Matters," *Yale Environment 360*, January 2017
- Ted Nordhaus & Michael Shellenberger, "Apocalypse Fatigue: Losing the Public on Climate Change," *Yale Environment 360*, November 2009
- Fred Pearce, "On Climate Models, The Case For Living with Uncertainty," *Yale Environment 360*, October 2010
- Katharine Hayhoe, "How to Find Common Ground in the Bitter Climate Debate," *Yale Environment 360*, August 2011
- Richard Kerr, "A Quick (Partial) Fix for an Ailing Atmosphere," *Science*, 13 January 2012

**Section VIII: March 27: Communicating, Using, and Paying for Science.** How is science communicated, and what difference does it make who does the communicating? What difference does it make if science is paid for by industry, government, or other actors? How can we ensure that science is used in an appropriate and effective manner?

- Stephen Bocking, "Skewing Science," *Alternatives Journal* (2009)
- Tim Johnson, "Dancing with the Media," *University Affairs*, September 2012
- Tristin Hopper, "The polar bears are fine: Certain populations coping with a warming Arctic better than expected," *National Post*, March 2, 2017
- Michael Lynch, "Googling Is Believing: Trumping the Informed Citizen," *New York Times*, March 9, 2016
- Emerging Technology from the arXiv, "The tricks propagandists use to beat science," *MIT Technology Review*, January 22, 2018

**Section IX: April 3: Last class.** The stuff I didn't get to in previous classes; review and preparation for the exam.