

Instructor

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Context

When the 20th century began, neither human numbers nor technology had the power to radically alter planetary systems. [As we begin the 21st century], not only do vastly increased human numbers and their activities have that power, but major unintended changes are occurring in the atmosphere, in soils, in waters, among plants and animals, and in the relationships among all of these. The rate of change is outstripping the ability of scientific disciplines and our current capabilities to assess and advise. It is frustrating the attempts of political and economic institutions, which evolved in a different, more fragmented world, to adapt and cope. [Bruntland report, World Commission on Environment and Development, 1987, p. 22, Oxford University Press].

Course Description

An introduction to the impact of human activity on ecological systems. Topics include ecosystem structure and function, human population change, resource management and pollution

Learning Outcomes

On completion of the course students should be able to

- demonstrate a knowledge of ecological systems and the impact of human activity on those systems
- demonstrate an understanding of key environmental issues
- demonstrate knowledge of courses of action which address environmental concerns.

Reading

The required text for the course is Raven and Berg, 2006, Environment (5th edition), Toronto: Harcourt (although 4th edition texts are acceptable).

Students should purchase the lab manual from the bookstore.

Internet

Students can access course notes and readings at

<http://www.elkint.disted.camosun.bc.ca/>

Evaluation

Exams (35% of course mark)

There are three in-class tests, together worth 35% of course marks. Their format will be discussed in class.

Labs (35% of course mark)

There are regular lab exercises throughout the course. These are an integral part of the course; they provide an opportunity to apply the lecture and text material to specific and practical examples. Some labs have an accompanying reading.

Lab assignments are always due the following week, at the first class of the week, unless otherwise stated. The labs can be hand-written, but your handwriting must be neat. Untidy and illegible writing will not be marked.

Class Discussion Questions (10% of course mark)

There are weekly discussion questions. These questions are intended to raise important concepts covered in class and the text and provide the opportunity for small group discussion. Discussion will take place in small groups. In addressing the questions identify key concepts and structure the discussion around these concepts.

Students will take turns acting as recorder. The recorder will keep notes of the discussion and make a list of the names of the students present. To receive marks, the notes and list of students will be handed in on the day of the discussion.

Research Paper (20% of course mark)

Students will choose one of the issues discussed in the Class Discussions and write a research paper. The paper will present a thesis, and support it with data and discussion. The paper provides the opportunity to apply and discuss concepts that we have studied in the course and are relevant to your chosen issue.

A map, hand drawn by the author, will accompany the paper at an appropriate scale to identify the location of some aspect of the issue. The map will contain map elements of title, scale, and legend. Spatial referencing (e.g. latitude and longitude) must be included in the map. It is important to refer to the map in your paper.

An important part of writing the paper is substantiating credibility of the material presented, by citing sources. Primary sources (i.e. peer reviewed) are most credible in this regard, and two primary sources are required. Students are expected to cite a minimum of three sources. The paper will follow usual academic format of introduction, discussion and conclusion. A short paper is expected. Be precise and to-the-point in presenting the material. Use 1000 words as a guide but this is not a firm target. The paper is due in the first class of the week of March 31.

Research Papers are graded on the basis of the following criteria:

Quality of research (20%) – This criterion relates to breadth of information and relevance. Choose your sources carefully. Use two primary sources.

Substance (30%) - identify important concepts that we have discussed in the course and show that you understand the material; explain it accurately and clearly

Quality of thought and analysis (30%) - show that you can think intelligently and critically about the material; present some of your own ideas

Style (20%) - write your paper in standard academic English, with proper grammar, syntax and punctuation; cite all sources using an accepted bibliographic style.

Primary research sources are strongly encouraged, i.e. sources that have been peer-reviewed (your text is acceptable).

Evaluation summary:

Tests	- 35%
Lab work	- 35%
Discussion questions	- 10%
Research paper	- 20%

Written work

All written work must be typed. The research paper must use DOUBLE SPACING. Students are expected to use an accepted bibliographic style. All sources must be cited.

Late work

Any lab or report handed in late will be penalized 5% for 3 days, and 10% for 4-7 days. Very late submissions (more than one week late) will not be accepted.

Exams

Students missing an exam will be given a zero, unless special circumstances exist.

Topic Outline

Week starting

Theme 1: Humans in the Environment

Jan 7-
Week1 Introduction to the course: course outline
 The Environment: What is the problem?

Lab: Geography of pollution

Class discussion: Human impact on the environment.
What are the most important environmental problems facing us today?

Jan 14-
Week 2 Introducing environmental science and sustainability
 Ecological Footprints
 Text: Chap 1

Required reading:

Global Footprint Network, *Ecological Footprints*
<http://www.footprintnetwork.org> (see Course manual)

Lab: Environmental science: Research and the scientific method;
geography of environment; human impact on the environment; ecological
footprints

Class discussion: Scientific assessment, risk analysis and the
precautionary principle.
What chemicals pose a risk to the environment? What chemicals pose a
risk to human health? Should there be greater controls on the use of
chemicals in society? Are genetically modified foods a risk to society?

Jan 21-
Week 3 Addressing environmental problems: Policy, economics and worldviews
 Text: Chap 2

Lab: Addressing environmental problems: Policy and economics;
worldviews.

Class discussion: Addressing environmental problems: How 'green' is
our campus? What environmental problems exist on the Camosun
campus? What solutions can you identify to these problems?

Video: Subdue the Earth

Theme 2: The World We Live In

Jan 28-
Week 4 Ecosystems and Energy
 Text: Chap 3

Lab: Ecosystems and Energy

Class discussion: Whaling.

Is whaling an unacceptable practice that should be stopped immediately?

Context: The hunting of whales (whaling) has a long history. Traditional hunts by small groups of primarily indigenous peoples have been replaced by high tech factory-style whaling. Until the modern era, whale populations were rarely at the point of extermination. Now, populations of most of the large species and many of the smaller species are at critical levels. Should whaling in international waters be allowed to continue? Should whaling be limited to closely monitored hunts by indigenous people? What kind of whale products should be traded internationally? Place yourself in the position of an owner of a Japanese factory whaler working in the Great Southern Ocean and in the position of someone who opposes whaling.

For additional information, see 'Take a Stand' in Raven text, end of chapter 3.

Feb 4-
Week 5

Structure and function of ecosystems
Ecosystems and Living Organisms; Ecosystems and the Physical Environment
Text: Chap 4, 5

Lab: Structure and function of ecosystems

Class discussion: The nature of community.
Is community based mostly on competition or cooperation between members? Consider concepts in the chapter that are supportive of your answer.

Class discussion: Agriculture and the use of chemical fertilizers.
Should society use legislation to prohibit farmers using fertilizers?
Is there an alternative to chemical fertilizers?

Feb 11-
Week 6

TEST I

READING BREAK

Feb 18-
Week 7

Ecosystems of the World
Text: Chap 6

Lab: Mapping ecosystems

Class discussion: BC's coastal temperate rainforest.
Should logging of BC's old growth temperate rainforest be stopped immediately?

Video: Battle for the Trees

Theme 3: Human Population and the Environment

Feb 25 - Human population dynamics
Week 8 Text: Chap 7, 8

Lab: Population dynamics

Class discussion: Addressing the tragedy of the commons: Closing the commons and examining the viability of the voluntary approach.
The case of population controls: Should strict population controls be used by all nations to address social and environmental problems?

Required reading:

Jared Diamond, 2005, Collapse, Ch. 10: Malthus in Africa: Rwanda's Genocide (pp. 311-328). Penguin Books (see Course manual)

Video: The population bomb

Theme 4: Resource and Environmental Management

March 3- Water
Week 9 Text: Chap 14

Lab: Water resources

Class discussion: Dam construction in BC.
Should all future dam construction in BC be prohibited?

Context: Dams can provide clean energy, water storage, and flood control. Hydro electricity forms an important part of the BC economy. However, dams also can cause environmental degradation and can prevent fish from migrating and breeding. In the Pacific Northwest, salmon populations have declined greatly.
For additional information, see 'Take a Stand' in Raven text, end of chapter 14.

Video: Cadillac desert

March 10- **TEST II**
Week 10

Focus on research paper

March 17-
Week 11 Wildlife and biodiversity
Text: Chap 17

Lab: Biodiversity

Required reading:

Leakey, R., The Sixth Extinction. Ch. 8: *Value in Diversity*. Toronto: Doubleday (see Course manual)

Class discussion: Arctic National Wildlife Refuge

Should the Arctic National Wildlife Refuge be protected or developed as part of North America's oil and gas reserves?

Context: The fate of the Arctic National Wildlife Refuge relates to decisions the US makes about energy policy, transportation choices, and other seemingly unrelated matters. Caught in the balance are the culture and livelihood of the Gwich'in people and the migratory wildlife in this fragile ecosystem.

For additional information, see 'Take a Stand' in Raven text, end of chapter 17, and the website for a recent documentary video, <http://www.oilonice.org>.

Video: Oil on ice

March 24-
Week 12 Food
Text: Chap 19

Lab: Calculating your Ecological Footprint

Required reading:

Wackernagel, M., How Big is Our Ecological Footprint? (see Course manual)

Margaret Wentz, *Puh-leez: It's food artisan, not farmer*. Globe and Mail. 2006 (see Course manual)

Class discussion: Organic farming and vegetarianism

a) Is organic food a fad, or an important environmental issue?

b) Should Canadians be required to follow a vegetarian diet?

EASTER MONDAY

March 31-
Week 13 The atmosphere and atmospheric change
Text: Chap 21

Research paper due first class of the week

Lab: Climate change

Class discussion: Canada's position on the Kyoto Protocol. Canada took a hard line at the recent climate change negotiations in Bali, siding with the US and Japan, against the Europeans who were arguing for fixed carbon and far-reaching carbon reduction targets. Canada's position is that it cannot meet its current Kyoto commitment without damaging its economy, and any future commitment it makes must happen in the longer term. Should Canada honour its commitment to the Kyoto Agreement?

Required reading:

Cowan, James, "Canada's route on Bali roadmap unclear", National Post, 18 December 2007

Abley, Mark, Does Baird know what he's saying? Toronto Star, 18 December 2007 (see Course manual)

Montgomery, Charles, The New Climate: Negotiating change, and a definition of justice. Globe and Mail, Dec 8 2007

Global Footprint Network, *Carbon Footprint*
<http://www.footprintnetwork.org> (see Course manual)

Video: Climate change

Theme 5: Thinking of the Future

April 7-
Week 14 **TEST III**

Lab: Thinking of the Future; reflecting on worldviews

Video: The man who planted trees

Grading

Letter grade	Numeric grade	Description
A+	90-100%	Superior Level Achievement
A	85-89	
A -	80-84	
B+	77-79	High Level Achievement
B	73-76	
B -	70-72	
C+	65-69	Satisfactory Achievement
C	60-64	Sufficient Achievement
D	50-59	Minimum level of achievement
F	0-49	Minimum level not achieved

Learning support and services for students

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at <http://www.camosun.bc.ca>

Academic conduct policy

There is an Academic Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section: <http://www.camosun.bc.ca/policies/Education-Academic/E-2-Student-Services-&-Support/E-2.5.pdf>