**GEOGRAPHY 100: ECOSYSTEMS AND HUMAN ACTIVITY WINTER 2004**

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## Context

When the century began, neither human numbers nor technology had the power to radically alter planetary systems. As the century closes, 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, 2004, Environment ($4^{th}$ edition), Toronto: Harcourt (although $3^{rd}$ edition texts are acceptable).

Students should purchase the lab manual from the bookstore. The manual contains several readings required for specific labs.

## Evaluation

### Exams (35% of course mark)

There are four tests spread through the course, the first worth 5% and each of the others worth 10% of course marks. Their format will be discussed at the beginning of the semester.

Labs (30% 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. Assignments are always due the following week at the first class of the week. The labs can be hand-written, but hand writing must be neat. Untidy and illegible writing will not be marked.

Class Discussion Questions (10% of course mark)
There are ten 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 groups of five students. In addressing the questions identify key concepts and structure the discussion around these.
Each student will take two 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.

Take a Stand: Exercises and Paper

Take a Stand Exercises (10% of course mark)
These exercises provide students the opportunity to work with controversial issues, to research key facts surrounding the issue and to take a position based on an evaluation of the information. We will look at controversy around four issues:

i) whaling
ii) development of the Arctic National Wildlife Refuge for oil and gas
iii) removal of dams to protect salmon habitat
iv) hunting of elephants

Information on the issues is found in the Raven text, under Take a Stand, at the end of chapter 4 (whaling), chapter 10 (Arctic National Wildlife Refuge), chapter 13 (removal of dams) and chapter 16 (hunting of elephants). Students will prepare a short report identifying **two** facts (arguments) that they see to be significant in support of **each side**. Each argument must contain an assertion plus evidence. The evidence can consist of a theory, concept or study from the text or readings or class discussions that supports the assertion's validity.
Students will conclude the report with a summary of their own position, based on the facts that they see to be most important (essentially this is a statement of the student's values). **The report will be presented on the day of the debate**. **Late reports will not receive marks**. The issue will be debated in class whereby each side (students will be assigned randomly to one side) has the opportunity to present key arguments. To conclude the discussion students will look for common ground between the two sides.

Take a Stand Paper (20% of course mark)
Students will choose one of the four issues and write an academic research paper. The paper will present a thesis and arguments to support it. Here is the opportunity to present concepts that we have studied in the course and are relevant to the issue.

A **map**, created by the author, will accompany the paper containing map elements of title, scale, direction and legend. Spatial referencing (e.g. latitude and longitude) will be included in the map.

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. 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 22.**

Research Papers are graded on the basis of:

- Quality of research (20%) - 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 | - 30% |
| Lab work | - 30% |
| Discussion questions | - 10% |
| Take a Stand exercises | - 10% |
| Take a Stand paper | - 22% |

Class participation -- can be used to adjust a final grade upwards by one or two percent

## General information for written work and exams

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 10%, and 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 5- Introduction to the course: course outline
The Environment: What is the problem?
Text: Chap 1

Jan 12- Addressing environmental problems: Part I

Text: Chap 2

Jan 19- Addressing environmental problems: Part II
Text: Chap 3

**Theme 2: The World We Live In**

Jan 26- Ecosystems and Energy
Text: Chap 4

Feb 2- Ecosystems and Living Organisms
Ecosystems and the Physical Environment
Text: Chap 5, 6

Feb 9- Research paper
Finding primary sources

TEST I

**Reading Break: Feb 13/14**

Feb 16- Major Ecosystems of the World
Text: Chap 7

**Theme 3: Human Population and the Environment**

Feb 23 - Population dynamics
Text: Chap 8 & 9

**Theme 4: Energy**

March 1- Energy: fossil fuels and renewables
Text: Chap 10 & 12

**Theme 5: Natural Resources**

March 8- Water
Text: Chap 13

TEST II

March 15- Wildlife and Biodiversity
Text: Chap 16
**Required reading**: Leakey, R., *Value in Diversity*, The Sixth Extinction Ch. 8. Toronto: Doubleday

March 22- Food
Text: Chap 18
**Required reading**: Wackernagel, M., How Big is Our Ecological Footprint?

Research paper due

**Theme 5: Environmental Concerns**

March 29- Atmospheric change
Text: Chap 20

**Theme 6: Tomorrow's World**

April 5- Revisiting World Views
Text: Chap 24

TEST III

**Lab Schedule**

*Week of*

Jan 5- Geography of pollution
Introducing World Views

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

Jan 12- Addressing environmental problems I:
Research and the scientific method
Geography of environment

**Class discussion:** Risk 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 19- Addressing environmental problems II:
Policy and economics.
World Views.

**Class discussion:** 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

Jan 20- Ecosystems I: Ecosystems and Energy.

**Take a Stand:** The issue of whaling.

**The Situation:** 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.

Whaling is an unacceptable practice and should be stopped immediately. (Source: Raven text, p. 80)

Feb 2- Ecosystems II: Ecosystems and Living Organisms.
**Class discussion**: The nature of community.
Is community based mostly on competition or cooperation between members? (Consider the concepts in the chapter that are supportive of your answer)

Ecosystems II: Ecosystems and the Physical Environment.
**Class discussion**: Agriculture and the use of chemical fertilizers.
Should society use legislation to prevent farmers from using fertilizers? Is there an alternative to this approach?

Feb 9 READING BREAK

Feb 16- Ecosystems III: Ecosystems of the World

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

Feb 23- Population dynamics

**Class discussion:** The issue of population controls versus 'freedom to breed'. Should strict population controls be used by all nations to address social and environmental problems.

Video: The population bomb

March 1- Energy

**Take a Stand:** The issue of the Arctic National Wildlife Refuge:
**The Situation:** Petroleum, a critical, non-renewable energy source, has been found in the Arctic National Wildlife Refuge, a pristine ecosystem unique in the United States. Should oil exploration and production be allowed or prohibited in the Arctic National Wildlife Refuge?

The Arctic National Wildlife Refuge should be developed immediately. (Source: Raven text, p. 232)

March 8- Water resources
**Take a Stand:** The issue of dam removal.

**The Situation:** Dams can provide clean energy, water storage, and flood control. However; they also can cause environmental degradation and can prevent fish from migrating and breeding. In the Pacific Northwest, salmon populations have declined greatly and three species of salmon from the Snake River are now endangered. One proposal to help the salmon recover is to remove four dams from the Snake River. There is intense debate within the fishing, agriculture, shipping, energy and environmental community over this proposal since removal of the dams may have great impact on all of them. Should four Snake River dams be partially removed to help endangered salmon species recover?

Dam removal should take place immediately on the Snake river.
(Source: Raven text, p. 306)

**Class discussion**: The price of water.
Should people pay a high price for the use of water, the more they use the more they pay?

March 15- Biodiversity

**Take a Stand:** Hunting of elephants (see Globe and Mail article in lab manual).
**The Situation:** In 1989, after protracted debate, CITES delegates (the Convention on International Trade in Endangered Species) voted to ban trade in elephant ivory. That vote was strongly opposed by southern African nations who saw ivory sales as a potential way to fund conservation efforts in their nations. In the following ten years, elephant poaching has decreased. In 1999, CITES approved ivory sales in three southern African nations and there is a perception among the eastern and central African states that continued sales - even if restricted to these three nations - will fuel an increase in elephant poaching and further decline of elephant populations across the continent. Should ivory sales be banned entirely? Should ivory sales be limited to nations that can demonstrate effective elephant population management practices, including antipoaching efforts? How can the conflicts between elephants and a growing human population be best handled?

A controlled hunt of elephants should be re-introduced in Sub-Saharan Africa?
(Source: Raven text, p. 378)

**Class discussion**: The Monarch Butterfly (see Globe and Mail article in lab manual). Is there a real risk of extinction for the Monarch butterfly? Should farmers and urban park managers and residents in Canada be required to protect the milkweed plant? Should Mexicans be compensated by North Americans to protect Monarch forest habitat from logging?

March 22- Food Resources: Calculating your Ecological Footprint

**Class discussion**: Vegetarian diet.
Should all Canadians be forced to follow a vegetarian diet?

March 29- Climate change

**Class discussion**: Canada's position on the Kyoto Protocol.
Should Canada have ratified its commitment to the Kyoto Agreement, given that the US and Russia have declined to ratify the Agreement?

April 5- World Views revisited

Video: The man who planted trees

**Grades**

Please note that grades at Camosun are determined as follows:

| Letter grade | Numeric grade | Description |
|---|---|---|
| A+ | 95-100% | |
| A | 90-94 | Superior Level Achievement |
| A - | 85-89 | |
| B+ | 80-84 | |
| B | 75-79 | High Level Achievement |
| B - | 70-74 | |
| C+ | 65-69 | Satisfactory Achievement |
| C | 60-64 | Sufficient Achievement |
| D | 50-59 | Minimum level of achievement |
| F | 0-49 | Minimum level not achieved |