

**Vancouver Summer Program**  
**Faculty of Science**  
**Package B: Exploring Vancouver: Systems and Sustainability**  
**The Vancouver Environment**

**Course Description**

Solutions to complex global challenges such as environmental sustainability require ‘systems thinking’--the process of understanding how components influence one another within a whole. In these courses, modeled on successful UBC field courses in [Iceland and Hawaii](#), we approach the Vancouver region as a system and consider the effects of inputs such as climate change. In this course, we study the geosphere, hydrosphere, atmosphere and biosphere of the Vancouver system through lectures and field trips around the Lower Mainland. By the end of this course, students will know more about the Vancouver system than many residents, and will be able to identify systems where they reside and travel.

**Course Overview, Content, and Objectives**

The course will draw on disciplinary experts from across UBC and the Lower Mainland to lead each session. These sessions will introduce and review general principles of each system component (for example, hydrology), offering examples from selected relevant Vancouver locations. The course instructor(s) will coordinate guest speakers and will also play a critical role in facilitating student understanding of the connectedness of the various topics under study. To this end, the instructor(s) will lecture on selected topics, and will also lead and facilitate weekly discussion and learning activities.

The summer intensive course offers students an opportunity to visit and experience Vancouver land, ecosystems and communities first hand, and to hear perspective from locals and local experts on contemporary and historic factors influencing the Vancouver system. In addition, the course will function as a data-gathering field trip to allow students to pursue a pre-selected research project investigating possible effects of perturbations of the Vancouver system.

During the field course, students will attend lectures from selected local guest speakers on topics relevant to Vancouver:

- Geological systems
- Hydrological systems
- Land systems
- Local climate
- Marine ecosystems
- Terrestrial ecosystems

**Learning Outcomes**

Through participating in this course, students will be able to:

- Describe the principles of systems theory, and explain its importance as an approach to solving complex global problems.
- Understand the fundamental connectedness of geological, hydrological, ecological systems, and the contributions of different scientific disciplines to their study.
- Outline the connected factors that have influenced evolution of the Vancouver regional system.
- Describe the 'three dimensions' model of sustainability, and its relevance as a framework in which to analyze and address global problems.

**Evaluation Criteria and Grading**

**Grading Scheme**

Final Exam	50 %
Research Presentation	25 %
Participation in weekly discussions and activities	25 %

**Assessed Activities**

**Research Presentation:** The course will culminate with a final presentation in which students will be asked to apply principles of system theory and sustainability in an investigation of a selected aspect of the Vancouver environmental system. This project will be developed in consultation with the instructor. It will allow students to pursue a selected topic area of interest in greater depth, and to critically examine factors influencing the status and sustainability of that component of system (for example, water supply or energy systems).

**Weekly discussions:** Throughout the course, students will be required to participate in weekly discussions. Week by week, discussions will be initiated by the facilitator via provocative or critical questions relating to the weekly topic, and will ask students to synthesize ideas as the course proceeds. **A primary goal of the discussions is to promote continuous application of the principles of systems thinking, as new themes are introduced throughout the course.**

**Course Schedule**

**Course Topics and Schedule**

Below is a TENTATIVE schedule for the course.

Week	Topic
1	<b>Introduction: A systems thinking approach to studying systems and sustainability</b> Overview of systems thinking and principles of system sustainability.

1	<b>Substrate of a system: The geological element</b> Principles of geology and their significance in shaping the ‘substrate’ of a land-based regional system.
1	<b>The science of water: Hydrological study of water systems</b> Principles of hydrology and the role of water in shaping landscapes.
2	<b>Glacier science and its contribution to understanding a land system</b> Introduction to the science of glaciology; past, present and future influences of glaciers.
2	<b>Climate science</b> Introduction to climate science. Connections between geology, hydrology and climate.
3	<b>The science of marine ecosystems</b> Introduction to ecosystems and the factors influencing marine life.
3	<b>Terrestrial ecosystems: Flora and fauna</b> Introduction to terrestrial ecosystems and the factors influencing animal and plant life.

### **Academic Integrity**

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President’s Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

### **Grading Practices**

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014>