

A. Division: ACADEMIC Date: MARCH 17, 1987

B. Department: SCIENCE & MATHEMATICS New Course:  X

Revision of Course Information Form:

Dated: \_\_\_\_\_

C. SCI 107 D. INTRODUCTION TO ENVIRONMENTAL SCIENCE E. 5

Subject & Course No. Descriptive Title Semester Credits

F. Calendar Description: Within the framework of marine, freshwater and terrestrial ecosystems, this course considers the characteristics of the natural environment and in particular the potential for environmental destruction. Questions such as the disposal of toxic wastes, natural hazards (landslides, volcanic eruptions and earthquakes), resource exploitation and landuse planning are discussed with special emphasis, through fieldwork, on the local or regional environment. This course is specifically designed for students with little or no background in science.

Summary of Revisions:  
 (Enter date and Section Revised)  
 e.g. 1982-08-25  
 Section C,E,F, and R.

G. Type of Instruction:		Hours Per Week	H. Course Prerequisites: NONE	
Lecture	<u>4</u>	Hrs.	I. Course Corequisites: NONE	
Laboratory	<u>1½</u>	Hrs.		
Seminar	_____	Hrs.		
Clinical Experience	_____	Hrs.		
Field Experience	<u>1½</u>	Hrs.		
Practicum	_____	Hrs.		
Shop	_____	Hrs.		
Studio	_____	Hrs.		
Student Directed Learning	_____	Hrs.		
Other (Specify)	_____	Hrs.	J. Courses for which this Course is a Pre-requisite:  NONE	
Total	<u>7</u>	Hrs.	K. Maximum Class Size:  35	
L. College Credit Transfer <input checked="" type="checkbox"/> X		M. Transfer Credit: Requested <input checked="" type="checkbox"/> X Granted <input type="checkbox"/>		
College Credit Non-Transfer <input type="checkbox"/>		(Specify Course Equivalents or Unassigned Credit as Appropriate) U.B.C. S.F.U. U. Vic. Other		
Non-Credit <input type="checkbox"/>				

*Dorland Wilson* Course Designer(s)  
*Valentin Schaefer* Director / Chairperson  
*B. M. Wilson* Divisional Dean  
*P. H. Angus* Registrar

N. Textbooks and Materials to be Purchased by Students (Use Bibliographic Form):

Living in the Environment: An introduction to Environmental Science, 4th Edition  
G. Tyler Miller, Jr. Wadsworth Inc. 1985.

Complete Form with Entries Under the Following Headings: O. Course Objectives; P. Course Content;  
Q. Method of Instruction; R. Course Evaluation

**O. COURSE OBJECTIVES:**

Upon completion of this course the student will be able to:

1. Show an understanding of the components and dynamics of an ecosystem.
2. Show an understanding of the distinctions between major biotic and abiotic characteristics of marine, freshwater and terrestrial ecosystems.
3. Show an understanding of the interaction between people and the physical/biological environment in which they live and of the problems produced by the increasing encroachment on that environment.
4. Describe the geomorphological processes operating in terrestrial and marine environments and identify the more common landforms produced by these processes.
5. Show an understanding of the processes involved in the exploitation of natural resources, both renewable and non renewable, and of the potential detrimental effects of such exploitation.
6. Describe the problems and possible solutions associated with the disposal of toxic and hazardous wastes.
7. Discuss the causes of natural hazards and their effect on the stability of ecosystems and on patterns of human settlement.
8. Discuss the impact of the exploitation of various energy sources on the environment and the relative merits of alternative energy sources.
9. Show an understanding of the effects of urbanization on the natural environment and of the scientific, social and political considerations required for landuse planning.
10. Demonstrate an understanding of the concepts described above in the context of local or regional environmental problems.
11. Show an understanding of some of the potential global environmental crises.
12. Demonstrate an understanding of environmental regulation.

**P. COURSE CONTENT**

**A. LECTURE TOPICS:**

1. Introduction - the environment
2. Ecosystems overview - freshwater/marine/terrestrial
3. Nature of the Physical Earth/Earth Materials (rocks, minerals, soils)

P. **COURSE CONTENT:** (Continued)

A. **LECTURE TOPICS:** (Continued)

4. Freshwater Ecosystems: (a) fluvial geomorphology  
(b) lacustrine ecology  
(c) river ecology  
(d) reservoir ecology
5. Case Study 1. Hydroelectric Energy
6. Groundwater geomorphology
7. Toxic/hazardous waste disposal
8. Case Study 2. Lower Mainland Waste Disposal/Water Pollution
9. Marine Ecosystems: (a) coastal geomorphology/coastline engineering  
(b) intertidal/subtidal/pelagic/estuarine habitats  
(c) physical oceanography
10. Case Study 3. The Fraser Delta
11. Terrestrial Ecosystems: (a) Biomes  
(b) Forest Ecosystems  
(c) Palaeobotany  
(d) Glacial Geomorphology
12. Case Study 4. Spruce budworm/Clearcut logging techniques
13. Natural Hazards (a) Earthquakes  
(b) Volcanoes  
(c) Effect on ecosystem
14. Case Study 5. Mt. St. Helens
15. Landuse Planning (a) Parks  
(b) Wildlife management  
(c) Urbanization
16. Case Study 6. Boundary Bay/Reifel Wildlife Refuge
17. Natural Resources - renewable/non renewable
18. Case Study 7. Global Problems with natural resource depletion

B. **LABORATORY TOPICS - GEOLOGY**

1. Rocks and Mineral Identification
2. Topographic Maps
3. Fluvial geomorphology
4. Groundwater/Hydrology
5. Palaeobotany
6. Landuse - site selection
7. Coastlines
8. Glaciation

- **BIOLOGY**

1. Plant identification
2. Sampling forest ecosystems
3. Sampling freshwater ecosystems
4. Intertidal sampling

**FIELD TRIP SITES:**

1. Lions Bay/Squamish Highway
2. Boundary Bay/Burns Bog
3. Point Grey
4. Fraser River - boat trip
5. Mt. St. Helens or Mt. Garibaldi
6. Reifel Wildlife Refuge
7. Iona Island sewage treatment
8. Fisheries Research Lab

**Q. METHOD OF INSTRUCTION:**

1. The primary mode of instruction will involve lectures and laboratories.
2. Several field trips will be scheduled during the semester and occasional weekend field trips may be included.
3. Readings will be assigned to supplement lectures.
4. Audio-visual aids will be used where appropriate.
5. Guest lecturers may be used periodically.

**R. COURSE EVALUATION:**

The course evaluation will consist of:

- |                         |     |
|-------------------------|-----|
| 1. Mid-term examination | 30% |
| 2. Term projects (3)    | 40% |
| 3. Final examination    | 30% |