

Division: ACADEMIC

DATE: August, 1991

B: Department: SCIENCE & MATHEMATICS

New Course: _____

Revision of Course Information form: X

DATED: Feb., 1977

C: BIOLOGY 322 D: ECOLOGY E: 5
 Subject & Course No. Descriptive Title Semester Credit

F: Calendar Description

A study of the interactions of living organisms with their environment. Population and community dynamics are examined, ending with a consideration of how human activities have an impact on natural systems.

Summary of Revisions:
 (Enter date & section)
 Ex: Section C,E,F, & R

 F, G, M, N, O, P, R

G: Type of Instruction: Hours Per Week/ Per Semester

Lecture	_____	Hrs.
Laboratory (Audio-Tutorial)	<u>2</u>	Hrs.
Seminar	<u>2</u>	Hrs.
Clinical Experience	_____	Hrs.
Field Experience	<u>4</u>	Hrs.
Practicum	_____	Hrs.
Shop	_____	Hrs.
Studio	_____	Hrs.
Student Directed Learning	_____	Hrs.
Other	_____	Hrs.
TOTAL	<u>8</u>	HOURS

H: Course Prerequisites:
 BIOLOGY 110 & BIOLOGY 210

I: Course Corequisites:

J: Course for which this course is a pre-requisite

K: Maximum Class Size:
 20

M: Transfer Credit:

Requested _____
 Granted X

Specify Course Equivalents or Unassigned Credit as Appropriate

U.B.C. BIOL (200 Level Credit) (Ecology) (1.5)
 S.F.U. BISC 204 (3)
 U. Vic. BIOL 306 (1.5)
 OTHER:

L: College Credit Transfer X
 College Credit Non-Transfer _____

Valentin Elvira

COURSE DESIGNER(S)

L. A. Hamboulia

DIRECTOR/CHAIRPERSON

William Selman

DIVISIONAL DEAN

P. H. [Signature]

REGISTRAR

N: TEXTBOOKS AND MATERIALS TO BE PURCHASED BY STUDENTS

Brewer, R., 1988. The Science of Ecology. Toronto: Saunders College Publishing.

Biology 322 Study Guide. Douglas College

O. COURSE OBJECTIVES

Upon completion of this course, the student will be able to demonstrate an understanding of the principles of ecology, including being able to:

1. describe the biotic and abiotic components of terrestrial, marine and fresh water environments
2. describe the concept of ecosystem and the factors that limit the distribution and abundance of populations
3. describe the flow of energy through ecosystems
4. describe community characteristics and the dynamics of community organization and change
5. describe the cycling of nutrients through ecosystems
6. describe the management of resources and the effects of human impacts on ecosystems
7. conduct field research using various techniques, and the application of this research to practical problems
8. interpret results of computer models illustrating simple ecological concepts
9. research, prepare and deliver a seminar presentation on an ecological topic and submit a major report on the same.

P. COURSE CONTENT

The major topics in the course include the following:

1. Biotic and abiotic components of environments including:
 - terrestrial (including soils)
 - freshwater
 - marine

2. Ecosystems, including:
 - dynamics of ecosystems
 - food chains
 - distribution and abundance of organisms, including competition/predation, spatial relations, numerical/logistic responses

3. Field Techniques
 - soil analysis
 - plant/animal identification
 - quadrat/belt transect analysis
 - lake/stream analysis
 - intertidal sampling

4. Energy flow and nutrient cycles
 - types of productivities
 - factors affecting primary productivity
 - trophic structure and ecological pyramids
 - energy efficiencies

5. Analysis of population structures and dynamics
 - population distribution
 - spatial patterns in abundance
 - Chitty hypothesis
 - symbiosis
 - niches
 - ecological equivalents
 - ecogeographic niches
 - life tables
 - predator/prey models

6. Community characteristics including,
 - species diversity indices
 - ecotones/edge effects
 - primary/secondary succession
 - equilibrium models
 - alpha/beta diversity
 - community complexity and diversity

7. Resource Management techniques and pollutants including:

- pest control techniques
- persistence and toxicity of pollutants
- identification and preservation of endangered species
- ecological reserves
- environmental impact assessments

8. Major Environmental issues in B.C., including:

- impacts on Fraser River
- toxic waste problems
- acid rain
- air pollutants
- environmental effects of a large dam
- other land use conflicts

R. COURSE EVALUATION

TYPE OF EVALUATION	POINTS
Weekly Class Evaluations	20
Microcomputer Lab. & Field Trip Reports	10
Major Project	10
Seminar Presentation	5
Comprehensive Examinations - midterm	25
- final	30
TOTAL	100

GRADES:	A ⁺ 92-100	A 87-91	A ⁻ 82-86	B ⁺ 77-81	B 72-76	B ⁻ 67-71
	C ⁺ 62-66	C 57-61	C ⁻ 53-56	P 50-52	F 0-49	

Notes:

1. Weekly Class Evaluations:

Each week (for 10 weeks) there will be written evaluations in class based on the course objectives and other material covered in the previous week. The best 9 out of 10 evaluations will be averaged to determine this portion of the grade.

2. Microcomputer Labs. & Field Trip Reports:

Approximately three microcomputer labs must be completed and handed in during the semester. In addition, there are at least five field trips which constitute the major component of the laboratory part of the course. Both microcomputer labs and field trips are designed to complement the theory dealt with in the course.

3. Major Project & Seminar Presentation

A seminar presentation is an oral presentation. It involves research of an assigned topic, preparation and presentation to the class. The research must also be submitted as a written report.

4. Comprehensive Examinations:

A mid-term will be worth 25 marks and a final examination will be worth 30. The mid-term examination will cover all material covered prior to the examination. The final examination will cover the entire course. If the student achieves a better grade on the final exam than on the mid-term examination, the mid-term grade will be raised to equal that achieved on the final examination.