UNIVERSITY COLLEGE OF THE FRASER VALLEY

COURSE INFORMATION

DISCIPLINE/DEPARTMENT: Biology **IMPLEMENTATION DATE:** Nov. 1993

Revised:

Biology 210	Introduction to Ecology	4
SUBJECT/NUMBER OF COURSE	**DESCRIPTIVE TITLE**	**UCFV CREDITS**

CALENDAR DESCRIPTION: An introduction to the basic principles of ecological theory relating to the structure and function of ecosystems. This course includes field trips. A required overnight, weekend field trip will be held on the third weekend of the fall semester.

RATIONALE:

COURSE PREREQUISITES: BIO 112 or (BIO 101 and 102) with a "B" or higher

COURSE COREQUISITES: None

HOURS PER TERM FOR EACH STUDENT	**Lecture**	**60**	**hrs**	**Student Directed Learning**	**hrs**
	Laboratory	**45**	**hrs**		
	Seminar		**hrs**	**Other - specify:**	
	Field Experience		**hrs**		
				TOTAL	**105 HRS**

MAXIMUM ENROLMENT: 24

Is transfer credit requested? : **Yes** **9** **No**

AUTHORIZATION SIGNATURES:

Course Designer(s): Edith Camm, Ph.D.

Chairperson: Curriculum Committee

Department Head: Ernest Kroeker, Ph.D.

Dean: K. Wayne Welsh

PAC: Approval in Principle **(Date)**

PAC: Final Approval: October 28, 1998 **(Date)**

Biology 210
NAME & NUMBER OF COURSE

SYNONYMOUS COURSES:

(a) replaces N/A
(course #)

(b) cannot take N/A for further credit
(course #)

SUPPLIES/MATERIALS:

TEXTBOOKS, REFERENCES, MATERIALS (List reading resources elsewhere)

Elements of Ecology, 3rd edition. Robert L. Smith. Harper Collins Publishers.

OBJECTIVES:

To give students an understanding of the relationship between organism and environment at the level of the individual, population and ecosystem.

METHODS:

Lecture, demonstration, discussion, audio-visual presentation, laboratory exercises, field exercises, field trips.

STUDENT EVALUATION PROCEDURE:

Midterm examination	20%
Laboratory exercises and term paper	40%
Final examination	40%

Biology 210
NAME & NUMBER OF COURSE

COURSE CONTENT

Introduction (Part 1. in Smith)

1. Introduction. What is ecology? Assignment of essay.
2. What is a species? (Ch 2, 3).
   Primer on identification of local plants.

Ecosystems Dynamics (Part VI in Smith)

3. Production in Ecosystems (Ch 22).
4. Trophic Structure, nutrient cycles.
   Plant Competition Experiment - Set up.

Diversity of Ecosystems (Part VII in Smith)

5. Temperate forests.
6. A preview of soils, with emphasis on temperate forests.
   Stanley Park Field Trip. Zonation in a Marine Environment.
7. Grasslands/Deserts.
8. Oceans.
   Little Mountain Field Trip. Forest Community Structure.
9. Tundra and Taiga
   Succession and Ecotones near the College Fen.
10. Tropical Forests.

Individuals and the Environment (Part III in Smith)

11. Climate, Temperature, Moisture.
    Habitat Selection by Isopods. (Report due Nov 3).
12. Light.

Populations (Part IV in Smith)

13. Density, Distribution and Age; Survivorship Curves.
    Adaptations for Predation.
14. Life History patterns.
15. Predation
16. Population growth: E. coli (Report due Nov. 17).
17. Competition.
18. Parasitism.

Biology 210

NAME & NUMBER OF COURSE

Community Organization (Part V in Smith)

19. Community Organization and Structure-Spacial Patterns.
20. Community Change Temporal Structure.
    Case study of a managed population-Fallow deer.
21. Succession in Plant Communities.
22. Natural Disturbance and Human Impact
23. Workshop discussion of essay topics: What is the relationship of ecology to environmental issues.

Laboratory Exercises

A primer on identification of local plants. Students are introduced to the techniques of plant identification, and learn a few species that they will encounter in following field exercises.

Plant Competition Experiment. Students set up a greenhouse experiment to demonstrate intraspecific and interspecific competition between seeds planted at different densities.

Intertidal Zonation. Students examine the intertidal plants and animals along transects at two sites in Stanley Park differing in current and wave action.

Community Structure. The class will use the techniques of point-quarter sampling to examine frequency, density, and dominance of the tree species at Little Mountain near Coquitlam.

Succession and Ecotones. The class will examine vegetation along transects near the campus, and will compare their data with similar transects from years past to look for evidence of succession.

Under the Surface: (i) Soil Chemistry, (ii) the Seed Bank. Students will examine chemistry of soil layers taken from old pasture and in the fen. They will plant samples of soil to see if there is evidence of a seed bank.

Habitat Selection by Isopods. An examination of distribution of terrestrial isopods along a temperature gradient, as an introduction to the concept of niche.

Adaptation for Predation. A visit to an animal rehabilitation shelter specializing in birds of prey, for an up-close look at avian top predators.

Population Growth in E. coli. An explanation of logistic growth, enabling students to calculate K and r.

Adaptation for Herbivory. A visit to a herd of fallow deer, with emphasis on herbivory, escape from predation, role of parasites etc.