Douglas College

EFFECTIVE: SEPTEMBER 2003

CURRICULUM GUIDELINES

A: Division: **Science and Technology**

B: Department/ Program Area: **Biology**

Date: **May 2002**

New Course | | Revision | **X**

If Revision, Section(s) Revised: **A, B, G, H, K, M, N, O, P, Q, R**

Date Last Revised: **August 1991**

C: Subject & Course No.	**D:** Descriptive Title	**E:** Semester Credits
Biology 322	**ECOLOGY**	**5**

F: Calendar Description: A study of the interaction 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.

G: Allocation of Contact Hours to Types of Instruction/Learning Settings

Primary Methods of Instructional Delivery and/or Learning Settings:

Lecture/Tutorial/Laboratory/Field trip

Number of Contact Hours: (per week / semester for each descriptor)

Lecture/Tutorial 4 hours/week
Laboratory/Field trip 4 hours/week

Number of Weeks per Semester:

14

H: Course Prerequisites:
Biol 210 with a C- or better grade

I. Course Corequisites:
None

J. Course for which this Course is a Prerequisite:
None

K. Maximum Class Size:
27

L: PLEASE INDICATE:

- [ ] Non-Credit
- [ ] College Credit Non-Transfer
- [X] College Credit Transfer: Requested [ ] Granted [X]

SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bccat.bc.ca)

M: Course Objectives/Learning Outcomes

Upon completion of this course, the student will

1. Be able to describe the biotic and abiotic components of terrestrial, marine and fresh water environments.
2. Be able to describe the concept of ecosystem and the flow of energy through ecosystems.
3. Understand the cycling of nutrients through ecosystems.
4. Be able to describe population structures, growth and the factors that limit the distribution and abundance of populations.
5. Understand the various ways in which species interact, including competition, predation, and mutualism and related evolutionary responses.
6. Be able to describe community structure and the dynamics of community organization and change, including biodiversity and biogeography.
7. Be able to use general principles of ecology to describe the management of resources and the effects of human impacts on ecosystems.
8. Understand the principles of field sampling and be able to conduct field research using a variety of sampling techniques.
9. Be able to interpret field results, perform simple statistics and write reports.
10. Research and write a major report on an ecological topic, and communicate the results in an oral presentation and/or poster.

N: 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/secondary productivity
   - trophic structure and ecological pyramids
   - energy efficiencies
5. Analysis of population structures and dynamics
   - population distribution and interactions
   - spatial patterns in abundance
   - 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
   - environmental impact assessments
8. Major Environmental Isues, including:
   - toxic waste problems
   - acid rain
   - air pollutants
   - environmental effects of a large dam
   - other land use conflicts

O: Methods of Instruction

This course involves 4 hours per week of classroom instruction and four hours per week of laboratory activity or field trip. Classroom work will include lectures and tutorials, and is integrated with textbook and scientific journal readings. Field trips and laboratory activities complement and enhance understanding of the theory content of the course.

P: Textbooks and Materials to be Purchased by Students

Smith, R.L. & Smith, T.M. (2001) Ecology & field biology, Sixth Edition. Benjamin Cummings.
OR
Ricklefs, R.E. (2001) The economy of nature, Fifth Edition. W.H. Freeman and Company.
OR
A current ecology text, as specified by the instructor will be required.

Q: Means of Assessment

Class Tests & Assignments	10-20%
Lab & Field Trip Reports	10-20%
Term Project	10-20%
Midterm examination	20-30%
Final examination	25-35%
TOTAL	100

GRADES:	**A+**	95-100	**A**	90-94	**A-**	85-89	**B+**	80-84	**B**	75-79
	B-	70-74	**C+**	65-69	**C**	60-64	**C-**	55-59	**P**	50-54	**F**	0-49

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

There is no provision for PLAR, other than that normally done by examining transcripts and comparing course outlines of biology courses taken within the last five years to the Biology 322 course content.

Course Designer(s)

Education Council/Curriculum Committee Representative

Dean/Director

Registrar