

A: Division: ACADEMIC DATE: MARCH 14, 1994

Department: SOCIAL SCIENCES New Course: X

Revision of Course  
information form: \_\_\_\_\_

DATED: \_\_\_\_\_

C: GEOGRAPHY 230 D: BIOGEOGRAPHY E: 3  
Subject & Course No. Descriptive Title Semester Credit

F: Calendar Description:

Biogeography examines the distribution of plants and animals and the causes of these patterns. This course focusses on the physical and biological factors that control plant community distribution and development from a geographical perspective, including geological, climatic, historical and anthropogenic controls.

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

G: Type of Instruction: Hours Per Week/

Lecture	<u>2</u>	Hrs.
Laboratory	<u>2</u>	Hrs.
Seminar	_____	Hrs.
Clinical Experience	_____	Hrs.
Field Experience	_____	Hrs.
Practicum	_____	Hrs.
Shop	_____	Hrs.
Studio	_____	Hrs.
Student Directed Learning	_____	Hrs.
Other	_____	Hrs.
<b>TOTAL</b>	<b><u>4</u></b>	<b>HOURS</b>

H: Course Prerequisites:  
Geog. 110 (Geog. 120 recommended but not required)

I: Course Corequisites: None

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

K: Maximum Class Size:  
35

M: Transfer Credit:  
Requested X  
Granted \_\_\_\_\_  
Specify Course Equivalents or Unassigned Credit as Appropriate

L: College Credit Transfer X  
College Credit Non-Transfer \_\_\_\_\_

UBC Geog.207  
SFU Geog.215  
UVIC Geog.203B

*Lusan R. Smythe*  
COURSE DESIGNERS

*A.M. Bilgar*  
DIVISIONAL DEAN

*Elizabeth Peckless*  
DIRECTOR/CHAIRPERSON

*P.H. Dugno*  
REGISTRAR

**N: Textbooks and materials to be Purchased by Students  
(Use Bibliographic Form):**

Cox, C.B. and P.D. Moore (1985). Biogeography: An Ecological and Evolutionary Approach. (4th Ed.) Blackwell, Oxford.

Text will be updated periodically.

---

**Complete Form with Entries Under the Following Headings:**

- O. Course Objectives; P. Course Content; Q. Method of Instruction;
- R. Course Evaluation

**O. COURSE OBJECTIVES**

At the conclusion of the course the student will be able to:

1. Define biogeography.
2. Describe the development of biogeography and its historical and ecological components.
3. Describe the factors that control plant growth and explain geographic variation in those factors.
4. Describe biogeographic populations, communities and ecosystems.
5. Describe Island Biogeography Theory, its applications and its limitations.
6. Describe the impact of past continental positions and climate changes on species distributions.
7. Describe inadvertent human impacts on species abundance and distributions.
8. Create maps of vegetation communities through aerial photograph analysis and ground truthing with a simple field survey.
9. Write a formal laboratory report.
10. Formulate null and alternative hypotheses and use elementary statistical methods to describe the distribution and abundance patterns of species.

P. COURSE CONTENT

1. Introduction to Biogeography  
History and Development of Biogeography  
Biogeography Within Physical Geography  
Historical Biogeography  
Ecological Biogeography
  
2. Biogeographic Distributions  
Taxonomy  
Populations, Communities, Ecosystems
  
3. Physical Controls on Life I: Atmospheric/Climatic Factors  
Electromagnetic Radiation
  - Radiation Laws
  - Radiation Balance
  - Photosynthetically Active Radiation
  - Geographic VariationTemperature
  - Energy Balance
  - Growing Degree Days
  - Geographic VariationWater
  - Hydrologic Cycle
  - Water Budget
  - Water Quality
  - Geographic VariationAtmospheric Gases
  - Atmospheric Composition
  - Gas Exchange in Photosynthesis and Respiration
  - Air Quality
  - Geographic Variation
  
4. Physical Controls on Life II: Edaphic Factors  
Soil Formation  
Soil Properties
  - Soil Chemistry
  - Soil Texture
  - Soil Nutrients
  - Soil MoistureCanadian Soil Classification System  
Interactions Among Soils, Climate and Organisms  
Geographic Variation
  
5. Populations  
Distribution and Range  
Structure and Dynamics  
Dispersal

6. Communities

Niche Theory and Gradient Analysis  
Competitive Interactions  
Cooperative Interactions  
Predation  
Disturbance  
Succession

7. Ecosystems

Structure and Flows

8. Island Biogeography

Species/Area Concept  
Immigration, Extinction, Equilibrium  
Limits to the Theory of Island Biogeography  
Conservation Applications  
- Design of Nature Preserves

9. Historical Biogeography

Geologic Time Scale  
Evolution and the Fossil Record  
Mass Extinctions  
Continental Drift  
- Past Movements and Effects on Climate  
- Impact on Species Dispersal  
Climatic Change  
- Evidence of Climate Change  
- Glacials and Interglacials  
- Sea Level Change  
- Atmospheric Composition Variation  
- Impact of Climate Change on Species Distribution and Migration

10. Cultural Biogeography

Domestication and Agriculture  
Rehabilitation  
Future Prospects  
- Global Warming Impacts  
- Acid Deposition Impacts

Q. METHOD OF INSTRUCTION

This course will employ a number of instructional methods to accomplish its objectives, including some of the following:

1. Lectures
2. Labs
3. Field Work
4. Seminar Presentations
5. Slides, Films
6. Small Group Discussions

R. COURSE EVALUATION

The instructor will present a written course outline with specific evaluation criteria at the beginning of the semester. Evaluation will be carried out in accordance with Douglas College policy and will be based on some of the following:

1. Laboratory assignments with a combined value of up to 50%.
2. Multiple choice and/or short answer tests with a combined value of up to 50%.
3. Field work with a value of up to 20%.
4. A term project or paper with a value of up to 25%.
5. An individual or group presentation on an assigned topic with a value of up to 15%.

An example of one possible evaluation scheme would be:

4 Laboratory Assignments	40%
Mid Term Examination	15%
Final Examination	20%
Field Project	10%
Term Paper	<u>15%</u>
	100%

## **RATIONALE FOR NEW COURSE - GEOGRAPHY 230. BIOGEOGRAPHY**

Biogeography is a fundamental part of the core curriculum in university Geography Departments. It has for some time been the intent of the Geography Discipline to bring this course on line.

The addition of Geog. 230 - Biogeography to our existing second-year courses (Geog. 210 - Climatology and Geog. 220 - Geomorphology) offers students the ability to acquire transfer credits at the second-year level in all major subfields of Physical Geography. Students then have the opportunity to move directly into third-year courses when they transfer to University.

© Douglas College. All Rights Reserved.