University of Manitoba
Department of Environment and Geography

ENVR 4060 K01, GEOG 4060 K01 and GEOG 7500 K01

Biogeography

Winter Term 2016

Instructor: Dr. Erin McCance (204) 232-2941 ummccanc@cc.umanitoba.ca
255 Wallace

Classes: Friday 2:30 – 5:15 pm in 217 Wallace Building

Text: MacDonald, G.M. 2003. Biogeography: Space, Time and Life. John Wiley & Sons

A. Goals:

Biogeography is a senior-level course in the Department of Environment and Geography. The intent is to provide students with a general understanding of the current and historical components of this discipline, especially considering it's ecological, analytical, and conservation aspects. The course will have a dual focus on identifying principles and concepts of the distribution of plants and animals worldwide as well as incorporating discussion on as many local (Manitoba, Canada, North America) examples as possible.

B. Objectives:

Upon completion of this course, students will be able to:

1. Understand and participate in discussions regarding various aspects of biogeography on a broad as well as a local scale.
2. Identify, examine, and assess the scientific literature relating to biogeography.

C. Course Content:

The course will consist of weekly seminar and discussion activities in which students will take an active role in presenting, examining, and questioning specific aspects of biogeography. The course will emphasize principles and approaches to understanding biogeography using the selected textbook as the basic guide. Additional background reading materials will be assigned and provided as needed. Students should prepare themselves for weekly seminars and class discussions by referring to designated chapters of the textbook and other materials of their own choosing. Teams of students will be responsible for leading approximately half of the course seminars. Weekly discussions will include consideration of 'Current Events' as related to biogeography. Students will be evaluated through class participation, seminar leadership, and a major term paper and oral presentation.

D. Evaluation:

- Weekly participation and discussion 20%
- Class team seminar 30%
- Term paper 30%
- Oral Presentation (on term paper) 20%

E. Tentative Course Schedule:

Jan. 8 **Introduction** **Erin McCance** (Chapters 1 & 2)
Introduction to the course.
Definitions, basic concepts and terms used in biogeography, main questions of biogeography, its importance to society.
Conservation biogeography. (Chapter 15)
Discussion on how the lessons of the past can be applied in conservation — defining conservation biogeography and its importance.
The biogeographical patterns of endangered species, species richness, and the distribution of habitats in relation to the human density patterns.
Snow Goose and Thunder Basin videos (time permitting)

Jan. 15 **An Overview – The Influence of Humans** **Robert Wheeldon**
The influence of humans including concepts of zonation, adaptation, evolution and resulting distribution. (Chapter 11)

Jan. 15 Class seminar teams and Chapter allocation must be arranged with instructor by this date or will be assigned by instructor.

Jan. 22 **Field Seminar – The Influence of Humans at Parkland Mews (Peregrine Falcons)** Robert Wheeldon, Parkland Mews

Jan 29 Term paper subjects should be approved by Instructor by this date.

Jan 29 **Field Seminar – 'International Biogeography' at Assiniboine Park Zoo**
Physical Processes – Chapter 3

Feb. 5-7 **Field Seminar Riding Mountain National Park – Aquatics, Avian, Terrestrial Mammals discussions and field activities - Manitoba Chapter of The Wildlife Society – Camp Wannakumbac**

Feb. 12 Discussion of the physical factors that shape life on earth including light, temperature, moisture, salinity, and their interactions.

Biological Interactions – Chapter 4
The roles of biological processes such as predation, competition, mutualism, parasitism, and mimicry in shaping the distribution of life on Earth.

Dr. Vince Crichton, Certified Wildlife Biologist, Retired, Big Game Manager, Manitoba Conservation and Water Stewardship – Effects of Predation and Parasitism on Manitoba's Moose Population

Feb. 19 **Study Break – No class**

Feb. 26 **Disturbance Factors - Chapter 5**
The roles of physical and biological disturbances such as fire, wind, floods, and pathogens in shaping the distribution of life on Earth.

Changing continents and climates – Chapter 7
A timeline of life on Earth and including continental drift and glaciation cycles.

Dr. Patrick Nelson, North/South Consultants, Aquatic Environment Specialist – Biogeography of fish species in Manitoba

Mar. 4 **Communities, Formations, and Biomes – Chapter 6**
The concept of biological communities. A summary of the life zones, realms, regions, and subregions of the planet.

Dispersal, Colonization, and Invasion – Chapter 8
Discussion of how species 'move' and how movement is hindered — concepts of dispersal, 'temporary' land bridges, colonization, extinction, ecological niches, and habitat barriers or filters.

Dennis Brannen, Caribou Biologist, East Side, Manitoba Conservation and Water Stewardship – Biogeography of Caribou in Canada and Manitoba

Mar. 11 **Evolution, speciation, and extinction – Chapter 9**
Evolutionary theory, isolation and speciation mechanisms, founder effects, bottlenecks, adaptive radiation, evolutionary convergence, and extinction.

Description/Interpretation of Biogeographic Distributions – Chapter 13
Mapping biogeography, range size/shape, common biogeographical distribution patterns, reconstruction of evolutionary history, the phylogeographic revolution.

Barry Verbiwski, Head of Furbearer and Human-Wildlife Conflict, Manitoba Conservation and Water Stewardship
Roger Toews, Fur Buyer, Manitoba & Western Ontario

Mar. 18 **Urban Owl Field Seminar - Christian Artuso, Bird Studies Canada**

Mar. 25 **Good Friday – No Class**

Apr. 1 **Oral presentations**

April 8 **Oral presentations (Continued) *<u>Term papers due</u>**

F. Team Assignments

One of the evaluation components for this course will be a class team seminar presentation summary of concepts from a chapter of the textbook. Students will be evaluated as part of a 2-3 person team that summarizes and presents the information for the weekly class from a textbook chapter as specified during the months of February and March in the course schedule. The evaluation will be based on presentation effectiveness, clarity, and content. Each team should plan for their presentation to be completed in 25 minutes. As part of the student participation marks, each student will be asked to fill out a presentation evaluation form on the class team seminar presentations. While only the instructor and quest professional evaluations will actually count for the class team seminar presentation marks, the evaluations received by the other students in the class will be reviewed and their feedback considered. Contribution to team evaluations will be incorporated into the students overall participation marks.

G. Term Paper and Oral Presentation

Students are expected to write a term paper on the biogeography of a taxon (subspecies, species, superspecies, subgenus, genus, subfamily, or family) or specific population of their own choosing. **Students must discuss the past (evolutionary history), present (current distribution patterns), and future (changes in limiting factors, threats to survival, and management issues) of their chosen taxon, paying attention to the various concepts discussed throughout the course.** Term paper subjects should be discussed with and approved by the course instructor before January 29. Term papers should be in the range of 20 pages long (25 pages maximum) double spaced, using 12 pt font. This paper is due in the final class, April 8, 2016 into the dropbox available on D2L.

For the term paper, students are expected to reference scientific literature, in particular peer-reviewed articles, as well as web-based sources, using a standard scientific referencing system. Each student is expected to make a 15-minute oral presentation on his or her chosen topic during one of last 2 classes.

H. General

Graduate students will be expected to provide a longer, more detailed response to assignment questions, a more technical term paper, and a 25-minute oral presentation.

Students are expected to read the required sections of the textbook before class. Students are expected to attend all classes and actively participate in the course material.

Requirements for course attendance and rules regarding plagiarism may be found in the General Academic Regulations and Policy Section of the University of Manitoba Graduate and Undergraduate Calendars.

Students will not be permitted to hand in assignments late, except for documented medical or compassionate reasons.

Evaluative feedback will be provided upon request of the individual student before the voluntary withdrawal deadline date of March 18, 2016.

I. Grading Scale

The grading scale used by the Department of Environment and Geography is:

A+	**90-100**	**C+**	**65-69**
A	**80-89**	**C**	**60-64**
B+	**75-79**	**D**	**50-59**
B	**70-74**	**F**	**0-49**