

**GEOGRAPHY 619
H(3-2)****Spatial Ecology**

Timetable: See current Infonet information at: <http://www.ucalgary.ca/InfoNet/> **Catalogue #:** See current information on Infonet

Instructor: Dr. S. M. Alexander
Office: ES 460
Office hours: TR 14:00 – 15:00
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TA (if applicable):
Office:
Office hours:
Phone:
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Official Course Description:

Applies the principles of landscape ecology and conservation biology to the study of spatial effects on individual species and on the structure, dynamics, diversity and stability of multi-species communities. The use of GIS and remote sensing technologies is a central theme. Topics include habitat fragmentation, metapopulation analysis and viability, wildlife habitat modelling (static and dynamic) management of endangered species, and spatial decision support. Other aspects of this course include the importance and use of indicator, umbrella keystone and flagship species on conservation.

Course Content

This course examines the use of GIS and ecological modelling in wildlife-ecosystem conservation and decision making. An emphasis will be placed on quantitative methods and hands-on application. An introduction to relevant ecological concepts will be provided, including population and landscape ecology, habitat fragmentation theory, population viability analysis and the focal species paradigm. The use of remotely sensed data in GIS habitat suitability analysis will be detailed, and will include a review of RS-based metrics that predict wildlife presence (e.g. terrain ruggedness). Fragmentation and diversity metrics also will be explored. ArcGIS and Idrisi (limited use) will be featured in labs. Other useful wildlife habitat and fragmentation analysis software will be used in lab, including Fragstat, ArcView-Animal Movement (home range analysis) and RAMAS-GIS. A comparison of statistical approaches in habitat analysis will be detailed (e.g. univariate and multivariate analysis, logistic regression, AIC – Information Criterion, and Bayesian logic). Issues of spatial autocorrelation, error analysis and spatio-temporal scale-effects will be addressed, relative to predictive habitat modelling and wildlife survey techniques. Spatial dynamics (e.g. forest change and wildlife movement) will be investigated using GIS techniques, such as cellular automata and time series analysis. Human influences on wildlife dynamics also will be addressed in the framework of population viability analysis, using non-spatial and spatially explicit population viability software (VORTEX and RAMAS-GIS). Local carnivore species (i.e. wolves, lynx and marten) will be used in the modelling approaches. Students are expected to participate in class discussions and problem solving exercises.

Blackboard If Blackboard is being used as a course tool: <http://blackboard.ucalgary.ca/>

Required Texts: Specific readings TBA, taken from Predicting Species Occurrences: Issues of Accuracy and Scale. 2002. Edited by J. Michael Scott, Patricia J. Heglund, Michael L. Morrison, et al. Island Press. 868pp. will be available in the Geography Collections Room.

Grading (Weighting)

Lab Exercises (8 labs)	40%
Research project (incl. lit review)	25%
Literature Review/Project Presentations	20%
Class Participation (discussions/readings)	15%

Prerequisite: Consent of the department (instructor). Geog 519, and background in GIS and Ecology is recommended.

Supplementary Fees: *none*

Grading System

96-100	A+	77-80	B	59-61	C-
90-95	A	71-76	B-	55-58	D+
86-89	A-	65-70	C+	50-54	D
81-85	B+	62-64	C	0-49	F

For additional detailed course information posted by the Instructor see Blackboard at: <http://blackboard.ucalgary.ca/>

Plagiarism

Academic dishonesty is not an acceptable activity at the University of Calgary and students are **strongly advised** to read the Student Misconduct section in the University Calendar. Quite often, students are unaware of what constitutes academic dishonesty or plagiarism. The most common are 1) presenting another student's work as your own 2) presenting an author's work or ideas as your own without proper referencing and 3) using work completed for another course. This activity will not be tolerated in this course and students conducting themselves in this manner will be dealt with according to the procedures outlined in the calendar.

Re: Posting of Grades and Picking-up of Assignments

- Assignments will be handed back only in class or by the Professor at pre-arranged time(s).
- To receive your assignment back via mail, please include an appropriately sized self-addressed, stamped envelope with your assignment when handing in to the professor.
- Posting of grades will be at the discretion of each Professor and, if posted, they will be scrambled. Grades will **not** be available at Geography's main office.

Contact Information for Student and Faculty Representation

- SU VP Academic Phone: 220-3911 and e-mail: suypaca@ucalgary.ca
- SU Faculty Rep. Phone: 220-3913 and e-mail: socialscirep@su.ucalgary.ca

Campus Safewalk

Campus Security, in partnership with the Students' Union, provides the Safewalk service, 24 hours a day, to any location on Campus including the LRT, parking lots, bus zones and University residences. Contact Campus Security at 220-5333 or use a help phone, and Safewalkers or a Campus Security officer will accompany you to your Campus destination.