

Landscape Planning and Ecological Design

EVDS 626 H(0-8)

Fall 2014

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PF 3192, hours by appointment

Additional instructors:

Beverly Sandalack

Others (to be announced)

Introduction

This course examines key concepts in ecology, landscape ecology and environmental science relevant to planning at landscape scales. Principles of urban ecology, regional landscape ecology, watershed management and parks and protected area design are coupled with knowledge of landscape processes, ecosystem services, ecological infrastructure, and wildlife habitat to assess planning interventions in the built and natural environments. Skills are developed in geographic information systems (GIS) for monitoring the current state of landscapes and potential challenges to landscape function; and, for proposing solutions to these challenges. Field visits within the Calgary region, guest speakers from government and industry, and GIS skill-building exercises form part of the instruction.

Objectives

1. To acquire knowledge of the key concepts in urban ecology, landscape ecology and ecosystem science relevant to planning at landscape scales.
2. To introduce the skills necessary to measure in both quantitative and qualitative terms the current state of landscapes and potential challenges to landscape function; and, to use spatial analytical techniques to propose solutions to these challenges.
3. To develop confidence to dialogue in the ideas of landscape planning and in the complexities associated with operating at this broad spatial extent.

Teaching Approach

The course combines instructor-centred and student-centred classroom time with hands-on computer lab and field experiences. Assessment focuses on the effective application and communication of knowledge rather than on recording evidence of its acquisition. Three course assignments collectively provide opportunities to develop effective oral and written communication skills within a planning context, produce and interpret quantitative spatial analyses relevant to planning, and synthesize learning from across the course in an authentic final project.

Content areas

1. Scale as a determinant of planning objectives and as a descriptor of ecological phenomena
2. Urban ecology and environmental planning (e.g. linear corridors; plantings; plant communities; pollinators; urban forest; aquatic habitat; wetlands; light pollution; traffic; domestic animals; insect pests; mammal and avian pests; air pollution; air quality; water quality; soil contamination; soil ecology; urban heat; urban agriculture; mammal and bird habitat; green networks; urban parks; river and stream valleys; sewage; water storage and retention; hardscape; roofing; water conservation; agricultural chemicals; groundwater; stormwater and run-off; sewage; wind and airflow; microclimates)
3. Landscape ecological considerations for planning (e.g. patch; matrix; mosaic; corridor; edge; core area; habitat loss; habitat fragmentation; habitat connectivity; disturbance; succession)
4. Watershed planning (e.g. erosion; flood control; river and stream networks; land cover types)
5. Conservation planning, parks and protected areas design (e.g. size, configuration, connectivity of protected areas, green networks, biodiversity, island biogeography).
6. Planning for ecosystem services
7. Planning for climate change

Field Trips

Note: several required day-long field trips will be scheduled for 3 or 4 Wednesdays early in the term. The final course schedule will be distributed at the beginning of the semester.

2014/2015 SUPPLEMENTARY COURSE FEES

EVDS 626 – Landscape Planning and Ecological Design	\$70.00
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Evaluation

The course evaluation will be based on two assignments and a major project. There will be no final examination. Complete details for these assignments as well as assessment criteria will be provided in class when the assignment is first introduced.

Urban ecology micro-talks (25%)

Assigned a specific topic in urban ecology to research, students will give 3 minute micro-talks distilling key ecological ideas and how it concerns planning. Emphasis in this assignment is on the clear and concise oral communication of information.

(Due at time of presentation: September 29th to October 14th, 2014).

Urban green networks (25%)

Students will submit the products of a GIS lab activity involving the assessment of green network infrastructure in Calgary. Emphasis in this assignment is on producing and interpreting quantitative and spatial evidence.

(Due: November 5th, 2014).

Final project: Landscape transect (50%)

Working in groups of two, students will design a landscape transect through part of Calgary or its surrounding region in order to document and research key ecological features along this route. Written work and oral presentations based on this research describe these features, evaluate planning responses to landscape conditions and incorporate quantitative evidence derived from spatial analyses. Completing this project will require students to visit field sites independently and apply GIS skills developed in the course. Emphasis in this assignment is on synthesizing learning from the course and applying it a new context.

(Due: December 3rd, 2014).

Readings

Urban ecology reference (two copies available on 2-hr loan at Taylor Library)

Forman, R.T.T. 2014. *Urban ecology: science of cities*. Cambridge University Press, Cambridge.

Ecological design at the site scale (available as an e-book through library)

Beck, T. 2013. *Principles of ecological landscape design*. Island Press, Washington.

Additional selected readings: [Specific readings for course topics will be recommended]

Davoudi, S, Crawford, J, and Mehmood, A. 2009. *Planning for climate change: strategies for mitigation and adaptation for spatial planners*. Earthscan, London.

Forman, R. and Godron, M. 1986. *Landscape Ecology*. Wiley, New York.

Galpern, P, Manseau, M. and Fall, A. 2011. Patch-based graphs of landscape connectivity: A guide to construction, analysis and application for conservation. *Biological Conservation*. 144: 44-55.

McDonnell, M.J., Hahs, A.K., and Breuste, J.H. 2009, eds. *Ecology of cities and towns*. Cambridge University Press, Cambridge.

Marsh, W.M. 2005. *Landscape planning: environmental applications*. John Wiley and Sons, Hoboken, NJ.

Selman, P. 2006. *Planning at the landscape scale*. Routledge, London.

Turner, M. G. 2005. Landscape ecology: What is the state of the science? *Annual Review of Ecology Evolution and Systematics* 36: 319-344.

Tzoulas, K. et al. 2007. Promoting ecosystem and human health in urban areas using green infrastructure: a literature review. — *Landscape Urban Plann.* 81: 167-178.

Notes:

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	92.5-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	85-92.49	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	80-84.99	Very good performance
B+	3.30	3.15-3.49	76-79.99	Good performance
B	3.00	2.85-3.14	73-75.99	Satisfactory performance
B-	2.70	2.50-2.84	70-72.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	66-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	63-65.99	
C-	1.70	1.50-1.84	60-62.99	
D+	1.30	1.15-1.49	56-59.99	
D	1.00	0.50-1.14	50-55.99	
F	0.00	0-0.49	0-49.99	

A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor. Submissions must come from an official University of Calgary (ucalgary) email account.

It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Student Accessibility Services, please contact their office at 220-8237. (<http://www.ucalgary.ca/access>) Students who have not registered with the Student Accessibility Services are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test),(b) parts of the work are taken from another source without reference to the original author,(c) the whole work (e.g., an essay) is copied from another source, and/or,(d) a student submits or presents work in one course which has also been submitted in another course(although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.

Information regarding the Freedom of Information and Protection of Privacy Act (<http://www.ucalgary.ca/secretariat/privacy>) and how this impacts the receipt and delivery of course material. Emergency Evacuation/Assembly Points (<http://www.ucalgary.ca/emergencyplan/assemblypoints>) Safewalk information (<http://www.ucalgary.ca/security/safewalk>)

Contact Info for: Student Union (<http://www.su.ucalgary.ca/page/affordability-accessibility/contact>); Graduate Student representative(<http://www.ucalgary.ca/gsa/>) and Student Ombudsman's Office (<http://www.su.ucalgary.ca/page/quality-education/academic-services/student-rights>).