

Landscape Planning and Ecological Design

EVDS 626 H(0-8)

Winter 2014

Instructor:

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PF 3192, hours by appointment

Introduction

Project oriented course focusing on interdisciplinary methods, process and theoretical foundations of ecological design and its applications in the built environment and urban and regional landscapes. Principles of landscape ecology, systems theory, technology design and transfer ecosystem science, landscape process form and function, environmental gradients, habitat, trophic organization and nutrient flows will be used in design of interventions for problem solving in built environment and urban-regional contexts including: sustainable urban form, ecological infrastructure and ecosystem services, urban environmental management and water management in urbanizing watersheds.

Objectives

1. To acquire knowledge of the key concepts in 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 quantitative 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

This is a problem-based studio course with an emphasis on skill development using digital and quantitative tools. Studio time consists of instructor-supported individual and group activities with periodic instructional input in the form of lectures and quantitative skills demonstrations. Evidence of individual mastery of concepts and the development of skills is recorded in a portfolio for evaluation. The course also includes a major group project that requires a field visit during class time.

Content: Topic Areas

1. Scale as a determinant of planning objectives and as a descriptor of ecological phenomena
2. Key concepts in ecology relevant to landscape planning
3. Key concepts in landscape ecology (e.g. patch, matrix, mosaic, corridor, edge, core area, habitat fragmentation, connectivity)
4. Key concepts in conservation planning and reserve design
5. Measuring ecosystem services provided by landscapes
6. Measuring the amount, quality and connectivity of ecological infrastructure on landscapes.

Means of evaluation

The course evaluation will be based on a portfolio and on the written and oral products of the major project. There will be no final examination.

Portfolio (45%)

A series of artifacts assembled into a portfolio that demonstrate individual mastery of course concepts and development of quantitative skills (e.g. using GIS for landscape planning; measuring landscape pattern; designing reserve networks). Artifacts will be required on a specific list of topics corresponding to content introduced, developed, and practised during studio time. Each entry in the series is to be accompanied by a short reflection and self-assessment of how the artifact meets the pre-defined criteria for that topic. Instructor assessment of the portfolio will use the same criteria. A passing grade on the portfolio is required to pass the course.

(Due: February 28th, 2014).

Major project (55%)

A group project requiring an evaluation of ecological infrastructure in part of the Calgary region using the methods developed in the first part of the course. Studio time in the second part of the course will be entirely devoted to this project. Field work to support the evaluation will also be required (i.e. one site visit to identify prevailing ecological conditions and collect photographic evidence). Each group is expected to submit a written report and give a presentation on their report. A rubric detailing the criteria for evaluation will be provided when the project commences. A passing grade on the major project is required to pass the course.

(Written report and presentation due: April 14th, 2014).

Selected readings:

- Adriaensen, F. et al. 2003. The application of 'least-cost' modelling as a functional landscape model. — *Landscape Urban Plann.* 64: 233-247.
- Andersson, E. and Bodin, O. 2009. Practical tool for landscape planning? An empirical investigation of network based models of habitat fragmentation. — *Ecography* 32: 123-132.
- Botequilha Leitão, A. and Ahern, J. 2002. Applying landscape ecological concepts and metrics in sustainable landscape planning. — *Landscape Urban Plann.* 59: 65-93.
- Forman, R. and Godron, M. 1986. *Landscape Ecology*. Wiley, New York.
- Galpern, P. et al. 2011. Patch-based graphs of landscape connectivity: A guide to construction, analysis and application for conservation. — *Biol. Conserv.* 144: 44-55.
- Girvetz, E. H. et al. 2008. Integration of landscape fragmentation analysis into regional planning: a statewide multi-scale case study from California, USA. — *Landscape Urban Plann.* 86: 205-218.
- Pauleit, S. and Duhme, F. 2000. Assessing the environmental performance of land cover types for urban planning. — *Landscape Urban Plann.* 52: 1-20.
- Taylor, P. D. et al. 1993. Connectivity is a vital element of landscape structure. — *Oikos* 68: 571-573.
- Turner, M. G. et al. 2001. *Landscape ecology in theory and practice: pattern and process*. — Springer.
- 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.

2013/2014 SUPPLEMENTARY COURSE FEES

EVDS 626 – Landscape Planning and Ecological Design	\$70.00
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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>).