GeoDesigning Landscape Linkages
PLG 495/595a

School of Architecture, Landscape Architecture and Planning
University of Arizona
Spring 2013, Thursdays 1:30pm – 4:30pm, CALA 205 Lab

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Course Overview:
This course satisfies one of the required core class requirements for the GeoDesign concentration within the Planning Degree Program. The course will benefit from having a broad and interdisciplinary group of students and will focus on bridging the gap between the planning and landscape design disciplines while building on aspects of landscape ecology and conservation planning; all backgrounds and students are encouraged to join. The interdisciplinary team will be heavily engaged in the use of GIS and spatial modeling upon completing the course.

Course content will focus on applicable concepts in landscape ecology, conservation planning, modeling methodologies for generating wildlife corridors, and landscape linkage design strategies. The course will fuse this content with the landscape design discipline by blueprinting modeled corridors within natural and built reaches of the landscape. Specific elements of design will include strategies for maximizing core area within modeled corridors, mitigation of edge effects on the fringe, minimizing encroachment of adverse and adjacent land uses on the structural and functional components of linkages, and better designing the landscape matrix for connectivity.

This course will integrate methodologies and technologies central to the developing field of GeoDesign. Integrating design components within traditional linkage planning is new to the discipline and will provide the opportunity for students to pursue additional research and collaborative opportunities in the future. These potentially include:

1) Engagement in ongoing research activities with the instructor and other collaborating agencies such as the Arizona Department of Game and Fish and the National Park Service among others.

2) Contributions to the preparation of a journal article (acknowledgments and potential co-authorship)

Course Goals and Objectives:

1) Build on the student's understanding of natural system processes, their interactions with built environments, and their application in conservation planning:

    a) Explore, inventory, and develop an understanding of landscape ecology as it pertains to conservation planning and landscape connectivity.

    b) Distill and incorporate fundamental elements of landscape ecology into corridor modeling and design.

2) Develop geospatial skills which facilitate a spatial understanding of landscape ecology as it pertains to landscape linkage modeling and corridor design:

    a) Acquire technical skill sets pertaining to GIS system operation.

    b) Obtain, display, analyze, and model landscape elements and environmental factors.

    c) Engage in geospatial methodologies for inventorying and analyzing landscape fragmentation, permeability, and corridor modeling.

3) Seamlessly integrate landscape ecology, geospatial analysis, and physical design towards advancing the field of GeoDesign:

    a) Tightly couple design with real world environmental data.

    b) Emphasize and employ a methodology which embraces the use of technology, is data rich, and promotes integration of multiple disciplines towards achieving better informed planning and design.

    c) Provide meaningful translation of landscape ecology and its concepts into physical design components which can be integrated, through design, within landscape corridors.

    d) Generate informed corridor designs and graphics which:
        i. Emphasize strong project conceptualization
        ii. Integrate robust inventory and analysis
        iii. Foster stakeholder participation and discussion
        iv. Utilize the use of simulations
        v. Reflect iterative evaluations and feedback loops as part of the analysis and design process.

Course Format:
This course will utilize a combination of lectures, seminars, discussions, labs, and outside readings in order to convey the broad spectrum of materials being covered. This is designed to be an adaptive means of utilizing the best conveyance media possible for each topic and to fully engage the students in a variety of ways. Student contributions and involvement are paramount to the success of this course. As the course relies on student initiative and interest, students are encouraged to share their own experiences, understanding of the material and constructive commentary with the class.

GIS lab work makes up a major component of this course. Students will be provided with a student desk copy of the GIS software so that work may be conducted on their own personal machine. Students will have access to the lab during the designated course time; this time however should not be expected to be used as work time. Students will also gain lab access whenever a designated course is not scheduled in the lab; you will need to consult the lab schedule regularly as restricted lab access will not be an accepted excuse for late work.

Course Attendance and Grading:

Students are required to be on time and attend each class session. As this course meets once a week, missing even a single session results in a large disconnect of content and continuity.

An unexcused failure to attend a scheduled class session will result in an automatic 5% deduction from your final course grade. Excused absences must be discussed with the instructor, in writing, prior to missing the class. Excused absences are only those which are outlined by official U of A policy.

No late work will be accepted. All assignments are due at the beginning of class unless otherwise noted. Should an assignment be due on the date of an excused absence, it is the students responsibility to ensure that instructor receives it by the designated due date and time; if it is not received by this time, the work will be considered late.

A non-required working lab/studio meeting time may be established to encourage and guide student work outside of the designated class time. Additionally, students should expect to work a great deal out of class in order to assure appropriate mastery of the material and assigned work.

Your grade will be based upon your overall participatory willingness/attitude, readings and GIS exercises, corridor modeling analysis, and your final corridor design deliverables.

The following criteria will be used:

- Attitude:
  - Overall willingness to perform the required work and a healthy respect for the professors, classmates, and all invited guests.
- Understanding and Application:
  - Grasp and integration of the issues at hand.
- Process and Effort:
  - Diligence and attention to detail in performing assigned tasks.
- Craftsmanship:
  - A sign of care, interest, skill, and personalization in adding to course material and your work.

The relative value of course requirements will be apportioned as shown below. These are subject to change as the course schedule is finalized.

Attitude, Attendance, and Preparedness	10%
Readings, Presentations and GIS Exercises	30%
Corridor Modeling Deliverables	30%
Corridor Design and Final Deliverables	30%

The following standards will be used:

A=Excellent (90-100)	The work reflects significant depth of understanding of the assignments, to their full potential. The problems have been both fully developed and communicated exceedingly well in written, graphic, and other media. This means outstanding work.
B=Good (80-89)	Work shows an above-average depth of understanding. The problem solutions demonstrate an attention to detail and a consciousness of good craft. This means above-average work.
C=Fair (70-79)	All the requirements of the assignments have been met and the problems have been solved adequately, but the solutions lack depth of understanding and development. The overall work demonstrates skills barely appropriate for this level. This means average work.
D=Poor (60-69)	The work is extremely weak and lacks full resolution of the stated problems. Craft is weak. Skills appropriate to this level have not been demonstrated. This means poor work.
F=Failed (0-59)	The work is incomplete and/or poorly portrayed. The solutions to problems evidence a lack of understanding and skills appropriate to this level, and a general lack of effort in fulfilling assignments. This mean unacceptable work and the student must repeat course to get credit.

Course Materials:

Required Text:
Steinitz, Carl. 2012. A Framework for GeoDesign. ESRI Press, Redlands, CA.

Additional texts are currently being reviewed to determine their applicability and usefulness to you in this class and in the future. Students will be notified by the next class if there are to be any required texts for this course. A complete reading list is also being compiled and will be distributed during the next class.

In addition to the required texts, digital literature in the form of excerpts from other texts, professional documents, and journal articles will be posted on D2L on a weekly basis. This content will be posted at least 4 days prior to class period in which it will be discussed. It is the requirement of all students to have read this supplemental material fully, and be able to discuss in a critical way, the content and concepts of this material during class.

Prerequisites:

At minimum, students are required to have taken 1 GIS based course within the last 2 years of their academic study. GIS will be taught at a post-introductory level and built on rapidly in this course; GIS proficiency is anticipated to progress to intermediate and advanced levels as the semester progresses. The instructor reserves the right to assess a student's skillset individually to determine applicability of enrollment in this course. Additionally, students are strongly encouraged to have taken, or be enrolled in, courses which focus in environmental and conservation planning, landscape ecology, landscape design, and the use of GIS. This course will build on the knowledgebase of natural systems, factors, and technical skills acquired in courses such as these.

Academic Integrity:

Your conduct in this course is a reflection of your professional integrity. All materials presented in this course are subject to proper citation; this includes all data, images, text, ideas, concepts, etc. You will NEVER be reprimanded for citing materials; you will however receive a failing grade for the course for plagiarizing other's work or cheating.

The official University of Arizona Code of Academic Integrity states:

"Integrity and ethical behavior are expected of every student in all academic work. This Academic Integrity principle stands for honesty in all class work, and ethical conduct in all labs and clinical assignments. This principle is furthered by the student Code of Conduct and disciplinary procedures established by ABOR Policies 5-308 through 5-404, all provisions of which apply to all University of Arizona students."

Please find additional information at:
http://w3.arizona.edu/~studpubs/policies/cacaint.htm.
http://dos.web.arizona.edu/uapolicies/

Accommodation for Special Needs:

Special needs will be accommodated for based on official U of A policy. If you require any assistance on this matter whatsoever please contact me immediately and we will formulate a plan for addressing your needs and moving forward.

Students who need special accommodation or services should contact the Strategic Alternatives Learning Techniques Center (SALT):

The Center for Learning Disabilities
Old Main, PO Box 210021
Tucson, Arizona 85721-0021
(520) 621-1242, FAX (520) 621-9448, TTY (520) 626-6072)
http://www.salt.arizona.edu/

and/or
The Disability Resources Center
1540 E. 2nd Street, PO Box 210064,
Tucson, Arizona 85721-0064
(520) 621-3268, FAX (520)621-9423
http://drc.arizona.edu/.

Please find additional information at:
http://www.registrar.arizona.edu/ferpa/default.htm

Open Door Policy:

I have a vested interest in your personal and professional success; I want nothing more than for you to succeed and excel both in this course and beyond. My door is always open to discuss course materials, your personal and professional interests, and anything else which you feel I may be of use. I will make every effort to get to know you better and I am truly excited to be working with you in this course and in the future.

Course Schedule (Subject to Updates & Adjustments at Instructor's Discretion):

Date	Topic	Readings	Assigned/Due
1/10	Syllabus, Introductions, & Course Discussion		Assigned: Exercise 1
1/17	GeoDesign Concepts & Components	Miller 2012, Steinitz Ch 1-2, McElvaney Ch 1, D2L	Due: Exercise 1 Assigned: Exercise 2
1/24	No Class, GeoDesign Summit. GeoDesign Framework, Models, & Case Studies	Steinitz Ch 3-6 Steinitz Ch 6-9, McElvaney Ch 2-9, D2L	
1/31	Foundations in Landscape Ecology & Connectivity Conservation	Hilty Ch 1-2, Forman Ch 1, Crooks & Sanjayan Ch 1-2, D2L	Due: Exercise 2 Assigned: Exercise 3
2/7	Patch Size, Location, & Shape	Forman Ch 2 & 4, Hilty Ch 3, Lindenmayer & Fischer Ch 9, D2L	Due: Exercise 3 Assigned: Exercise 4 & 5
2/14	Boundaries, Edges, & the Matrix	Forman Ch 3, Lindenmayer & Fischer Ch 11,Hilty Ch 5, Lindenmayer & Fischer Ch 14, D2L	Due: Exercise 4 Assigned: Exercise 6
2/21	Corridors, Connectivity, & their Effects	Forman Ch 5-6 Lindenmayer & Fischer Ch 12, Hilty Ch 4, D2L Crooks & Sanjayan Ch 16, Beier et al. 1998, Gilbert & Norton 2009, D2L	Due: Exercise 5 & 6 Assigned: Exercise 7
2/28	Connectivity Modeling Concepts & Overview	Beier & Loe 1992, Baldwin et al. Ch 16, Rudnick et al. 2013, Beier et al. 2008, D2L	Due: Exercise 7 Assigned: Exercise 8
3/7	Connectivity Modeling Methods & Tools I	AZ Missing Linkages Beier et al. 2007, D2L	Assigned: Exercise 9
3/14	No Class, Spring Recess	D2L	
3/21	Connectivity Modeling Methods & Tools II	AZ Missing Linkages Beier et al. 2007, D2L	Due: Exercise 8 Assigned: Exercise 9 & 10
3/28	No Class, CELA Conference.	D2L	

4/4	Corridor Design, Planning, & Implementation I	Hilty Ch 7-8, Anderson & Jenkins Chp 3-4	Due: Exercise 9
4/11	No Class, Craig Johnson Fellowship, Utah State.	D2L	
4/18	Corridor Design, Planning, & Implementation II	Forman Ch 13, Beckman et al. Ch 2-3 & 13, D2L	
4/25	Corridor Design, Planning, & Implementation III	D2L	
5/2	No Class, U-wide Reading Day		
5/6	Final Exam (1:00 – 3:00pm)		Due: Exercise 10 (3:00pm)