The University of Calgary
Faculty of Environmental Design
Time: Friday 9:30-1:20 pm
Location: PF 2170/ PC LAB

Geographic Information Systems for Environmental Design
EVDS 611

Pablo Pina (Instructor) **Winter 2014**
ppinapou@ucalgary.ca 403 220 4064
PFB 2155, hours by appointment

Introduction
This course provides an introduction to the use of GIS in urban planning and environmental management. The focus is on conceptual foundations around GIS in order to deals with applications on modeling of population dynamics, land use patterns, and environmental management. Tutorials and assignments are mainly based on case studies around the Calgary Metropolitan area. The course emphasizes the benefits of GIS as a tool to integrate information under a spatial logic.

Objectives
1. To develop an understanding of the theory and practice of GIS
2. To understand the applications of GIS used by professionals in environmental management and urban planning
3. To develop skills and knowledge related to GIS
4. To develop skills and knowledge to integrate the following:
    a. GIS and mapping
    b. Decision support and GIS
    c. Sources for GIS data
    d. Data structures and data management
    e. Spatial analysis
    f. Data acquisition
    g. Design and implementation of GIS
    h. Modeling with GIS

Teaching Approach
A mixture of lectures and class discussion will be used to deliver fundamentals of GIS as well as the power in developing a spatial logic for environmental design. Lab tutorials and assignments would enable experiential learning to reinforce the conceptual frameworks introduced. Throughout course, guests representing different facets of GIS in environmental management and planning will be involved.

Content: Topic Areas & Detailed Class Schedule
Please Note: The sequence and content of this schedule may change due to unforeseen circumstances.

WEEK 1: January 10, 2014
TOPICS:

- Course overview (Lecture themes, tutorials, assignments)
- Introductions
- GIS demo (videos)
- GIS walkthrough –Lab

WEEK 2: January 17, 2014
TOPICS:

- Introduction to GIS: Geoinformation
- Introduction to ArcGIS –Lab tutorial

WEEK 3: January 24, 2014
TOPICS:

- Projections and transformations
- Invited speaker –Peter Peller (Spatial and Numeric Data Services-TFDL, University of Calgary)
- Projections and transformations –Lab tutorial

WEEK 4: January 31, 2014

TOPICS:

- Data format in GIS (vector-raster)
- Data handling in vector –Lab tutorial

WEEK 5: February 7, 2014
TOPICS:

- Data analysis (vector)
- Invited speaker –Greg Chernoff (Miistakis Institute)
- Data analysis in vector –Lab tutorial

WEEK 6: February 14, 2014
TOPICS:

- Assignment 1 Meet at the lab (10:30 am)

February 21, 2014 –NO CLASSES – EVDS BLOCK WEEK

WEEK 7: February 28, 2014
TOPICS:

- Data format (raster)
- Joe Kermish-Wells (Master in Environmental Design, University of Calgary)
- Data transformations and summary statistics –Lab

WEEK 8: March 7, 2014

- Spatial analysis
- Hydrology analysis –Lab tutorial

WEEK 9: March 14, 2014

- Images/Remote sensing
- Data interpolation –Lab tutorial

WEEK 10: March 21 2014

- Ortho rectification –Lecture and Lab tutorial

WEEK 11: March 28, 2014

- Image classification
- Christian Gass (O2 inc)
- Un-supervised classification –Lab tutorial

WEEK 12: April 4, 2014 LAST DAY OF CLASS

- Data acquisition
- Field trip on campus –Lab tutorial

WEEK 13: April 11, 2014

- Assignment 2 –Out. Meet at the lab (10:30 am)

WEEK 14: April 25, 2014

- Assignment 2 –In. Meet at the lab (10:30 am)

Means of Evaluation

There will be two assignments and ten tutorials that will be used for final grade evaluation:

• Assignment 1	**35% of final grade**
• Assignment 2	**35% of final grade**
• Tutorials	**20% of final grade**
• Participation/class engagement	**10% of final grade**
	Total 100% of final grade

Grading Scale

Final grades will be reported as letter grades, with the final grade calculated according to the 4- point range.

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 atthe 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	

Notes: - 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.

Suggested Background Readings

The following are general interest readings suggested to provide some background in Geographic Information Systems.

Antennucci,J.C., Geographic Information Systems, A Guide to the Technology, New York, New York: Van Nostrand Reinhold, 1991.

Berry, J., Beyond Mapping: Concepts: Algorithms and Issues in GIS, N.Y.: John Wiley & Sons.

Huxhold, William E., An Introduction to Urban Geographic Information Systems, New York, New York: Oxford University Press, 1991.

Lillesand, Thomas and Ralph W. Kiefer, Remote Sensing and Image Interpretation, New York, New York: John Wile & Sons, Inc., 1994.

NOTES: Other Relevant Course Related Policies and Procedures

1. 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. Email submissions will be considerd to have met deadlines. In addition, please submit hard copies.
2. 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 Disability Resource Centre, please contact their office at 220- 8237. (http://www.ucalgary.ca/drc/node/46) Students who have not registered with the Disability Resource Centre 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.
3. 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.
4. 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
5. Emergency Evacuation/Assembly Points (http://www.ucalgary.ca/emergencyplan/assemblypoints)
6. Safewalk information (http://www.ucalgary.ca/security/safewalk)
7. 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).