Faculty of Environmental Design
Course Title: Geographic Information Systems for Environmental Design
Course Number: EVDS 611
Instructors: Dr. Richard M. Levy, RPP, MCIP, **rmlevy@ucalgary.ca**
Session: Winter 2016
Time: Friday 9-12:50
Location: PF 3160/ PC LAB/ 2170
Office Hours: Mon, Wed 1:00-2:00, PF 4182

Introduction
Introduction to the use of GIS in urban planning and environmental management. Discussions on GIS modeling focus on population projection, location theory, land use modeling and environmental and ecological management. Case studies from both the public and private sector provide the basis of assignments. Emphasis given to developing sensitivity to the application appropriate for specific GIS problems.

Objectives
Students in the course will have an opportunity to develop an understanding of the theory and practice of GIS and remote sensing. In addition to class lectures and discussions, guest lectures and lab sessions will introduce students to both raster and vector based GIS applications used by professionals in environmental management and urban planning. Several assignments will be given during the term. A goal of these assignments will be to develop a sensitivity to the application appropriate for solving specific GIS problems. Many of the lectures will be illustrated by actual problems encountered in practice. Topics that will be discussed during the term include:

- GIS and mapping
- Decision support and GIS
- Sources for GIS and remote sensing data
- Data structures and data management
- Interpretation of multi-spectral, radar and other remote sensing data
- Land use classification
- Topographical analysis
- Design and implementation of GIS
- Modeling with GIS
- Spatial Analysis with GIS
- Data visualization

Teaching Approach:
Lectures and labs are an integral component of the course. Lectures will provide students with the background needed to complete the problems in the lab. During the semester you will have an opportunity to work with the two most popular desktop GIS applications in the market place: ArcGIS and MapInfo. In addition to acquiring experience with GIS software, you will learn how to utilize ACCESS as a database management tool. This will be a particularly important skill for those who plan to acquire field data as part of your graduate research. During the course you will also be introduced to EXCEL as a tool for data organization and statistical analysis.

Students should have a basic understanding of EXCEL for this course. If you have any questions about this course please contact the instructor at rmlevy@ucalgary.ca

Content: Topic Areas & Class Schedule:

No	Date	Period 1	Period 2	Period 3
1	15-Jan-16	Introduction: Why GIS	In class assignment	Types of Spatial Data: Raster vs Vector
2	22-Jan-16	Surveying, Measurement and Projection	Lab in Class	Surveying, Measurement and Projection
3	29-Jan-16	Photo Interpretation and Classification	Lab	Lab
4	5-Feb-16	Urban Modeling	Lab	Lab
5	12-Feb-16	Lab	Lab	Lab
6	19-Feb-16	**Block Week: No Class**	**Block Week: No Class**	**Block Week: No Class**
7	26-Feb-15	Urban Modeling	Lab	Lab
8	4-Mar-15	Remote Sensing	Lab	3D Data and the 3D World
9	11Mar-15	Regional Modeling	Lab	Lab
10	18-Mar-15	Lab: Regional Modeling	Lab	Lab
11	25-Mar-15	Data Structures	Lab: Access	Lab: Access
12	1-Apr-15	Good Friday: No Class	Good Friday: No Class	Good Friday: No Class
13	8-Apr-15	**Exam**	**Exam**	**Exam**

Means of Evaluation:

The course evaluation will be based on the assignments completed during the term, which includes written assignments, and a final exams.

1) Assignment 1: Urban Planning – 22%
2) Assignment 2: Urban Modeling – 22%
3) Assignment 3: Regional Planning – 22%
4) Final Exam - 34%

Grading Scale

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	95-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90-94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85-89.99	Very good performance
B+	3.30	3.15-3.49	80-84.99	Good performance
B	3.00	2.85-3.14	75-79.99	Satisfactory performance
B-	2.70	2.50-2.84	70-74.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	65-69.99	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	60-64.99	
C-	1.70	1.50-1.84	55-59.99	
D+	1.30	1.15-1.49	50-54.99	
D	1.00	0.50-1.14	45-49.99	
F	0.00	0-0.49	0-44.99	

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.

Notes:

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.

2. Academic Accommodations. The Academic Accommodations Policy can be found at: http://www.ucalgary.ca/access/accommodations/policy. It is the students' responsibility to request academic accommodations. If you are a student with a documented disability who may

require academic accommodations and have not registered with Student Accessibility Services, please contact them at 403.220.6019. Students who have not registered with Student Accessibility Services are not eligible for formal academic accommodations. More information about academic accommodations can be found at www.ucalgary.ca/access. 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.

All late assignments will be subject to a grade reduction. For each two days late, your grade will be reduced by .33/ 4.00.

Readings:
Links to articles will be available from D2L.

General References:
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.

WebSources:
www.GIS.Com   (ESRI supported website)
www.esri.com (ESRI home page)
http://www.gislounge.com/   (GIS portal)
http://www.csiss.org/ (GIS portal sponsored by a grant from NSF)
http://www.urisa.org/ (The Assoiciation for GIS Professionals http://www.freegis.org/
(Portal to free GIS software, documents and other
http://www.innovativegis.com/basis/ (Corporate website for Berry &Associates)

Software: ArcGIS, Google Earth, EXCEL