

GEOGRAPHY 695.15

GIS For Watershed Hydrology

Instructor: Jorge A Benitez

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Official Course Description:

Understanding the hydrologic functions of watershed structure is central to water resources management. However, measurements of watershed metrics are frequently unavailable and expensive to measure in the field. Because these metrics are spatially dependent, GIS (in conjunction with DEMs) is an excellent alternative to generate some parameters needed to assess watershed hydrology.

This course is designed to prepare students on: a) data requirements for hydrologic modeling and water resource management, b) the use of digital terrain models to measure watershed metrics, c) integrate and execute GIS hydrologic models, d) use GIS to develop water management strategies. The course will be centered on concepts and methods to integrate data on biogeochemical cycles, water balance, flood mapping, and non-point source pollution.

- Basis concepts on watershed management
- Approaches to hydrologic modeling
- Terrain analysis (*grids* and TINs)
- River and watershed networks.
- Non-point source pollution modeling

Prerequisite:

Basic skills on *ArcGis 9.2*, and the modules of 3D and Spatial Analyst

Supplementary Fees:

N/A

Text(s)/Readings:

There is no required text for this course. Students may wish to acquire:

Maidment D. and Djokic D, 2000. *Hydrologic and Hydraulic Modeling Support with Geographic Information System*. SRI Press.217 p.

Peckham, R.J., and G. Jordan (Eds.), 2007. *Digital Terrain Modelling, Development and Applications in a Policy Support Environment*. Springer. 313 p.

Grading (Weighting):

1. Three labs

Lab 1: From Topographic Maps to Corrected DEMs 15%

Lab 2: Terrain and hydrology Analysis 15%

Lab 3: Soil Erosion Assessment 15%

2. An individual Project: Managing Non-point Source Pollution at watershed level

Project Writeup 30%

3. Final Examination (short answer, 1.5 hour exam) 25%

Grading System:

The official grading scheme of the university will be used (Course Information Section in the University Calendar):

A+	4.00	Outstanding performance
A	4.00	Excellent-superior performance, showing comprehensive understanding of subject
A-	3.70	↑
B+	3.30	
B	3.00	Good - clearly above average performance
B-	2.70	↑
C+	2.30	
C	2.00	Satisfactory performance – basic understanding of the subject
C-	1.70	
D+	1.30	
D	1.00	Minimal Pass-marginal performance
F	0	Fail - - poor performance

For additional detailed course information posted by the Instructor see Blackboard at:
<http://blackboard.ucalgary.ca/>

Plagiarism

Academic dishonesty is not an acceptable activity at the University of Calgary and students are **strongly advised** to read the Student Misconduct section in the University Calendar. Quite often, students are unaware of what constitutes academic dishonesty or plagiarism. The most common are 1) presenting another student's work as your own 2) presenting an author's work or ideas as your own without proper referencing and 3) using work completed for another course. This activity will not be tolerated in this course and students conducting themselves in this manner will be dealt with according to the procedures outlined in the calendar.

Disability Resource Centre Accommodations

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. 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.

Re: Posting of Grades and Picking-up of Assignments

- Assignments will be handed back only in class or by the Professor at pre-arranged time(s).
- To receive your assignment back via mail, please include an appropriately sized self-addressed, stamped envelope with your assignment when handing in to the professor.
- Posting of grades will be at the discretion of each Professor and, if posted, they will be scrambled. Grades will **not** be available at Geography's main office.

Contact Information for Student and Faculty Representation

- SU VP Academic Phone: 220-3911 and e-mail: suypaca@ucalgary.ca
- SU Faculty Rep. Phone: 220-3913 and e-mail: socialscirep@su.ucalgary.ca

Campus Safewalk

Campus Security, in partnership with the Students' Union, provides the Safewalk service, 24 hours a day, to any location on Campus including the LRT, parking lots, bus zones and University residences. Contact Campus Security at 220-5333 or use a help phone, and Safewalkers or a Campus Security officer will accompany you to your Campus destination.