

GEOM 2007C
Geographic Information Systems
Department of Geography and Environmental Studies
Faculty of Arts and Social Sciences

Academic year: Winter 2019

Course Calendar:

Instructor: Niloofar Alavi

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Office:

Office hours:

Course Description:

This course introduces geographic information systems (GIS) as a set of tools for the management, analysis, and presentation of spatial information. You will learn both conceptual and practical aspects of working with a GIS, and how to compile and work with spatial databases. You are expected to gain an understanding of both the strengths and weaknesses of the systems presented in solving geographic research problems. The course requires no prior knowledge of GIS itself, but some background in associated concepts in geomatics is assumed; if you have not taken GEOM 1004, GEOM 2004, or EARTH 2406 preceding this class, you are encouraged to read some background readings that will be provided in the first week.

The workshops serve as an introduction to some of the concerns on the nature of geographic data, principles of GIS and map analysis. Topics will include an analysis of data in a spatial context; database structures for GIS; data query, summary and presentation; cartographic representation and creation of GIS databases for analysis. The student will learn how to compile and work with spatial databases and use them in an area of spatial analysis of interest to them.

The course will be delivered as a 3 hour workshop. The course will be very hands-on and a degree of familiarity with computers is assumed. Students should be able to use a word processor, text editor, various operating system applications and others as needed. Students deficient in these areas will be expected to gain confidence in using these applications on their own.

Text:

There is no definitive GIS text and definitely not one that covers the conceptual issues as well as the practical issues. The document we will be using is called: GIS: A Primer which is available in portable document format (PDF).

Special Note:

Students who are not fully comfortable working with computers will have difficulty in the early stages of the course. Casual use of word processors or an internet browser does not constitute an adequate background. The course runs 1 day a week for 12 weeks during winter sessions. Each session is 3 hours and you will probably require an additional 2-4 hours a week on average to complete assignments. The final project commands between 25 to 50 hours of work based upon prior student efforts. Allocate time accordingly.

Evaluation: There will be 3 lab assignments of equal weight, several lab orientation exercises that will not be marked, an online practical test, a written test, and a final project. The grade weighting will be:

Lab assignments (3): 30% (10% each)

Term test (practical and written): 40%

Final project: 30%

Bonus mark: ESRI Online Course 5%

Technical problems in lab work for this course can occasionally cause delays. Every effort will be made to prevent this from the lab systems perspective. **It is your responsibility to reduce your exposure to potential problems by reading and listening to all instructions thoroughly and carefully, and taking care to avoid risky practices.** You must practice careful file management (saving files in the proper directories, deleting all unwanted files, naming files thoughtfully, and keeping track of where everything is) at all times.

This course depends on a progression of practical exercises, with skills building upon each other across assignments. **Late labs will not be accepted**, except in extreme cases with legitimate, documented reasons. If you are not finished by the due date, it is best to turn in what you have at that time to get partial credit – it is very important that you do not get behind as new work is assigned.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

Plagiarism is a serious offence and will not be tolerated. If you submit someone else's work (ideas or material) as your own, that is plagiarism. All ideas presented which are not your own must be properly referenced. This includes more than just verbatim presentation of the writings or ideas of others as one's own – it can also include near-verbatim copying, or even the use of someone else's ideas, from other students, books, the Internet, or anywhere else. All plagiarism offences will be reported to the Faculty Dean's office.

You will often be working collaboratively to prepare for an assignment and possibly even to collect data, but **you must ALWAYS submit individual course work.** This means that every assignment **must be written and submitted individually**, demonstrating your **personal understanding and**

interpretation of the assignment content. Carleton's Academic Integrity Policy covers all these expectations and more, and is available at <http://www2.carleton.ca/studentaffairs/academicintegrity>

Term Test: Late in the term (weeks 11-12) there will be a two-part test, with a combination of questions on course content and a practical component. There will be multiple choice and fill-in-the-blank questions. The practical test will require you to use your GIS practical skills learned in assignments to answer the questions.

Final Project: During the second half of term, you will be working on individual final projects, producing interactive electronic map-based presentations. Examples of past projects will be discussed in class. Normally the project will focus on the Ottawa area, with a theme of your choice. You will use ArcGIS software to produce the electronic maps. The thematic data of Ottawa area that can be used in your projects are available in the GIS library. You need to submit a project proposal on the 5th week of the semester. You will submit all the files needed for a working map project, as well as a written report. The final project makes up 25% of your final grade. This grade is based on your project proposal, the final project report as well as electronic files.

Academic Accommodation: You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the Student Guide.

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the Student Guide

Academic Accommodations for Students with Disabilities: The Paul Menon Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first inclass scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made.

GEOM2007C – Winter 2018 – Tentative Term Schedule

<i>Week</i>	<i>Date</i>	<i>Topics</i>
1	Jan 11	Introduction to Course and GIS Lab familiarity
2	Jan 18	Spatial data: coordinates and projections (review), data models Assignment 1 starts
3	Jan 25	Attribute data: databases, attribute queries Assignment 1 continues
4	Feb 1	Spatial queries, manipulating vector data Assignment 1 due Assignment 2 starts
5	Feb 8	Data exchange, effective cartography Projects Assignment 2 continues Project proposals assigned
6	Feb 15	Vector data input: creating layers and digitizing; MADGIC presentation Assignment 2 due
7	Feb 22	Reading week
8	Mar 1	Digitizing and creating layers (cont'd) Assignment 3 starts
9	Mar 8	Customizing ArcGIS – Building models and tools Assignment 3 continues Project proposals due
10	Mar 15	Spatial analysis, 3D visualization, network analysis; tests discussed Assignment 3 due
11	Mar 22	Theoretical test
12	Mar 29	Practical test
13	April 5	Wrap-up / review project requirements Final project due