

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

Academic year: Winter 2020

Instructor: Niloofar Alavi, PhD

Email: Niloofaralavi@email.carleton.ca

Lectures: Tuesday 9:35-11:25, Southam Hall Room:304

Labs: D1: Wednesday 8:35-10:25, Loeb A200

D2: Friday 14:35-16:25, Loeb A200

D3: Tuesday 14:35-16:25, Loeb A200

Office hours: 11:25-12:25

Teacher Assistants: Jason Beaver (jasonbeaver@email.carleton.ca)

Calder Patterson (calderpatterson@email.carleton.ca)

TA office hours: To be determined

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.

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%

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.

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>

Lab assignments: There will be three assignments in total, each worth 10%. The lab assignments are meant to complement the course materials and to facilitate application and integration of knowledge gained from lectures and readings. The lab assignments will be posted on cuLearn at least one day ahead of their corresponding lab session. Please feel free to collaborate with others during the lab sessions to obtain common data, but please submit your own individually-written lab reports that contain your own analyses and answers to questions. Lab assignments must be typed. The assignment reports must be received by the start of the lab period of the day on which they are due. If you arrive late to a laboratory period on an assignment due date, it will be considered late and will be penalized by -10% of the maximum assignment grade. 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.

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 in class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made.

GEOM2007D – Winter 2020 – Tentative term schedule

<i>Week</i>	<i>Date</i>	<i>Topics</i>
1	Jan 7	Introduction to Course and GIS
2	Jan 14	Spatial data: coordinates and projections (review), data models
3	Jan 21	Attribute data: databases, attribute queries
4	Jan 28	Spatial queries, manipulating vector data
5	Feb 4	Data exchange, effective cartography Projects
6	Feb 11	Vector data input: creating layers and digitizing; GIS library presentation
7	Feb 18	Reading week
8	Feb 25	Digitizing and creating layers (cont'd)
9	Mar 3	Customizing ArcGIS – Building models and tools
10	Mar 10	Spatial analysis, 3D visualization, network analysis; tests discussed
11	Mar 17	Guest lecturer
12	Mar 24	Theoretical test
13	Mar 31	Wrap-up / review project requirements
14	April 7	Final project due

GEOM2007D – Winter 2020 – Tentative lab schedule

<i>Week</i>	<i>Date</i>	<i>Topics</i>
1	Week of Jan 13	Lab familiarity
2	Week of Jan 20	Assignment 1 starts
3	Week of Jan 27	Assignment 1 continues
4	Week of Feb 3	Assignment 1 due Assignment 2 starts
5	Week of Feb 10	Assignment 2 continues Project proposals assigned
6	Week of Feb 17	Reading week
7	Week of Feb 24	Assignment 2 due
8	Week of Mar 2	Assignment 3 starts
9	Week of Mar 9	Assignment 3 continues Project proposals due
10	Week of Mar 16	Assignment 3 due Work on projects
11	Week of Mar 23	Work on projects
12	Week of Mar 30	Practical test
13	April 7	Final project due