

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

Academic year: Winter 2021

Instructor: Niloofar Alavi, PhD

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Lectures: Monday 11:35-13:25, weekly BBB meetings

Labs: B1: Tuesday 8:35-10:25, weekly BBB meetings

B2: Wednesday 8:35-10:25, weekly BBB meetings

B3: Friday 8:35-10:25, weekly BBB meetings

Office hours: Monday 13:25-14:25 or by appointment

Teacher Assistants: To be determined

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%

Course delivery format:

Both lectures and laboratory sessions of this course would be delivered online. The weekly lectures will be offered synchronously through **BigBlueButton** platform. An access portal will be given on CULearn every week. You can join the lecture by clicking on “Join session” button.

The lab assignments instruction will be given asynchronously as pre-recorded videos and will be posted on CULearn prior to each lab session. Synchronous lab sessions will be held using

BigBlueButton platform on CULearn for question and answer and more clarification on potential issues that may rise up.

Please note that the sudden switch to online learning creates potential privacy problems that we never had to worry about in the past. When we do synchronous video calls and we have cameras on, we are opening windows into our homes. Please respect that fact with all your fellow students and instructors. Do not record people without their permission, and do not distribute recordings that we make available to anyone outside of the course. Remember, it's not just the course materials any more, now it is also recordings of what was said and seen and shown by all of your classmates. If you have any concerns about privacy, don't hesitate to bring them up with us.

Some of you have already made us aware of potential problems with uniformly participating in the synchronous portions of this course. Due to the practical nature of much of what we will cover, it will be very difficult or impossible to successfully participate completely asynchronously in this course. At the same time we recognize there will be challenges and will work with you to provide flexibility. Some of this will likely involve the recording of synchronous sessions. We ask all students to provide permission for these recordings, under the conditions outlined above, i.e. that the recordings only be used for the purposes of reviewing or getting caught up while taking this class.

Computing requirements:

[The computing requirement](#) of this course is ESRI ArcGIS Desktop 10.8. You can download a one-year student license through the [GIS library website](#). Follow the instruction to install the software on your computer. If you have any questions or technical problems regarding downloading and installing ArcGIS Desktop on your machines email GIS@carleton.ca. Please note that ArcGIS Desktop is not supported on Mac operating system. For the system requirements of the software please check [here](#).

Due to the COVID-19 situation, physical access to the DGES GIS lab is not possible, while, remote access to the lab computers is now enabled using VMware Horizon Client. Instructions on how to login to the virtual machines through VMware Horizon Client is given [here](#). Please note that VMware Horizon Client is the new Virtual Desktop Infrastructure (VDI). VDI allows you to access campus computers and labs to use software already installed on the virtual machine without needing to download the software onto your own machine. You should not be downloading software onto the virtual machine – you do not have the privileges to do so.

This course depends largely on a progression of practical exercises, with skills building upon each other across assignments using the software. **It is your responsibility to ensure that you have the system requirements of the software AND/OR you can access remotely to the DGES GIS lab computers.** If you have any questions or concerns in that regard please talk to your instructor or TAs early in the semester. In addition, 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, especially when remoting in to the GIS lab computers. Instruction on file management will be given in the introductory lab session.

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.

Course evaluation:

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 and submitted via the submission portal provided on CULearn. Late assignments will be penalized by -10% of the maximum assignment grade per day.

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 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 30% of your final grade. This grade is based on your project proposal, the final project report as well as electronic files.

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>

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 2021 – Tentative term schedule

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

GEOM2007D – Winter 2021 – Tentative lab schedule

<i>Week</i>	<i>Date</i>	<i>Topics</i>
1	Week of Jan 11	Lab familiarity
2	Week of Jan 18	Assignment 1 starts
3	Week of Jan 25	Assignment 1 continues
4	Week of Feb 1	Assignment 1 due Assignment 2 starts
5	Week of Feb 8	Assignment 2 continues
6	Week of Feb 15	Reading week
7	Week of Feb 22	Assignment 2 due Assignment 3 starts
8	Week of Mar 1	Assignment 3 continues Project proposals due
9	Week of Mar 8	Assignment 3 due Work on projects
10	Week of Mar 15	Work on projects
11	Week of Mar 22	Work on projects
12	Week of Mar 29	Practical test
13	Week of Apr 5	Final project due