

Fall 2021 - Introduction to GIS - GEOG5804

Department of Geography and Environmental Studies

Instructor: Koreen Millard koreenmillard@cunet.carleton.ca

Lecture/Seminar Time: Mondays 10:05 - 11:25 am

Location: Zoom (link will be posted on Brightspace, attendance to the live session is optional)

Technical Demos/Technical help/Office Hours: Wednesdays 10:05 - 11:25 am on Zoom (link will be posted on Brightspace)

Course Format: Blended

I. Course description: GIS for students with no previous experience. Includes data formats and structures, input/output and analysis capabilities, and GIS applications.

This is a first course in Geographic Information Systems (GIS) for graduate students who have not taken undergraduate courses in GIS but may wish to use the technology in their thesis/project work. You will use a simple-to-learn, yet powerful, GIS package (ArcGIS Pro with various extensions). Lectures and seminar discussions will 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. You will learn how to compile and work with spatial databases and use them in an area of spatial analysis of interest to you. You will require a Windows PC and familiarity with Windows operating system is assumed. A Virtual Machine is available through the department so Mac and Linux users can access a Windows environment. It is also assumed that students will be able to use word processors and other utilities (Acrobat Reader, Winzip/7Zip, Notepad, Explorer etc).

This course will run online using a blended approach. I will present and record lectures and software demos during the Monday lecture time slot. You can log in and join the lectures live and ask questions, or watch the recorded lectures and demos on your own schedule. Technical guidance and my office hours will also be online: during the Wednesday time slot. The aim is to use this time for you to get extra help if needed. Office hours and technical help sessions will not be recorded.

There will be three labs and one practical test that you should complete independently and hand in through a Brightspace dropbox. The test will be in a defined time slot with submission online. Tests and labs are designed to evaluate your skills and understanding of a variety of topics, but not all topics may be directly applicable to your own research interests. The final project topic will be chosen by you, in consultation with the instructor, and ideally should be related/relevant to your thesis research.

***The topics listed in the course outline below are subject to change. Within the first few weeks of the semester, I will gather information about what aspects of GIS you will need to use in your research and aim to focus on the aspects that will be useful to you. ***

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II. Preclusions: none

III. Learning Outcomes:

- Use theoretical knowledge to undertake basic GIS analysis
- Understand and use GIS project planning methodologies
- Be able to use GIS software to create cartographic representations of spatial data

IV. Texts: none, any readings will be assigned and provided in PDF format

V. Course calendar (tentative: dates and topics subject to change):

lecture date	Workshop topic	Due in Workshop
Sept 8	welcome + intro to course + set up software	
Sept 13 & 15	Earth models, Projections and coordinate systems	
Sept 20 & 22	Earth models, Projections and coordinate systems	
Sept 27 & 30	GIS data models (raster vs vector)	
Oct 4 & 6	Introduction to cartographic design	Lab 1: GIS data models
Oct 13	<i>No class Monday (Thanksgiving) - lecture will be in Wednesday slot - Cartography # 2</i>	
Oct 18 & 20	<i>Winter Break</i>	
Oct 25 & 27	Vector data, spatial data queries, SQL, joins	Lab 2: Cartography
Nov 1 & 3	Vector GIS tools and toolboxes	
Nov 8 & 10	Intro to raster analysis, georectifying data and working with imagery	Lab 3: Spatial Queries and GIS tools
Nov 15 & 17	<i>Lab test ("take home" due Nov 10)</i>	
Nov 22 & 24	Intro to Google Earth Engine	
Nov 29 and Dec 1	Intro to working with point clouds (LiDAR and UAVs)	
Dec 6 and 8	Open Source GIS	Final Project
Dec 10	Wrap Up	

VI. Evaluation:

Online GIS course certificate completion - 10%

3 labs - 40% (variable weighting)

1 practical lab test - 20%

Final Project- 30% (*due last day of classes as per university regulations*)

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Standing in a course is determined by the course instructor but is 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.

Late Policy: All assignments must be submitted through the Brightspace dropbox by the due date and time. No late assignments will be accepted, with the exception of those cases where a student is sick or if you have already arranged for academic accommodation as described in subsequent sections of this syllabus. In the case of illness, you must make arrangements with the course instructor prior to the due date/time. In place of a doctor's note or medical certificate, students are advised to complete the [self-declaration form](#) available on the Registrar's Office website to request academic accommodation for missed coursework including exams and assignments.

Lecture/Lab attendance: Lectures and technical demos will be recorded on Zoom during the Monday class time slot but you are not required to attend. If you do want to attend you are welcome to ask questions and participate, or, you can watch the recorded lectures on your own schedule if that suits best. Office hours will be held online and your attendance is optional. While these will not be recorded, demos/trouble shooting may be given during this time.

VII. Statement on Plagiarism

PLAGIARISM

The University Senate defines plagiarism as "presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own."

This can include:

- reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source;
- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another's data or research findings;
- failing to acknowledge sources through the use of proper citations when using another's works and/or failing to use quotation marks.

Plagiarism is a **serious offence** that cannot be resolved directly by the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course.

VIII. Academic Accommodations

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.

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.

Academic Accommodations for Students with Disabilities: The Paul Menton 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. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable). More Information:

<https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodations.pdf>

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: <https://carleton.ca/equity/sexual-assault-support-services>

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. 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.

<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

