



**Intro to Geomatics & GIS**  
**GEOG 2232**  
**Winter 2024 Lakehead-Georgian**  
**Department of Geography and the Environment**

Course instructor: Megan Sheremata, Assistant Professor, Department of Geography and the Environment/Department of Geography

Office: OR 1037 (in Residence building)

Drop-in Office hours: Tuesdays 10 - 11 AM

Additional virtual office hours: By appointment

For appointments please use email: [msherema@lakeheadu.ca](mailto:msherema@lakeheadu.ca)

Note: email should only be used to schedule appointments – use lectures and D2L discussion board for missed work, questions about course content).

Class Location:

Lecture: Tues and Thurs from 3:00 to 4:00 PM

Lab: Friday 8-11AM

Welcome to GEOG 2232! In this course we will study principles and techniques of geomatics, primarily by working within Geographic Information Systems (GIS). Geomatics is a field concerned with spatial data. More specifically, it encompasses the practices involved in the 1. collection, 2. organization and 3. visualization of geographic/spatial data. While there is an emphasis on computer technologies in geomatics, it is a field based on the study of mapping fundamentals, as well as how we make and use tools in the field to collect geographic information. It also involves how we construct and use databases. These subfields, in turn, shape how we can understand, use and visualize spatial phenomena.

Many people still think of GIS as simply a map-mapping platform. But GIS are more powerful – they are database platforms for spatial data that let us do many things. We can make maps, 3-D models, create apps, and tell multi-media stories in GIS.

On the other hand, making maps is a complex design process that influences how others understand the world – for better or worse. So in this course we will introduce basic cartographic principles, and examine some key ethical dimensions of geomatics.

### **Learning Outcomes**

By the end of this course, you will be equipped with the conceptual and technical tools needed to work with a variety of geospatial data. You will be able to:

1. Define and apply foundational concepts in geomatics when working with geospatial databases and producing maps and other geographic models.
2. Work independently in Geographic Information Systems (GIS) to project, symbolize, analyze, and present geodata.

3. Apply cartographic principles in map design and to critically evaluate geospatial data sources, methods, and tools.

## Textbook

*Mastering ArcGIS Pro ISE, 2<sup>nd</sup> Ed.* 2022. Maribeth Price. McGraw-Hill Canada.

Make sure to purchase the 2<sup>nd</sup> ISE edition from McGraw Hill Canada (Print or digital edition) with **access to Canadian Companion Connect**, which has essential exercises leveraging Canadian datasets. <https://www.mheducation.ca/mastering-arcgis-pro-ise-9781265127718-can-group>

We will not need the text until the third week of lab.

Readings will be finalized by Friday January 19.

## Evaluation

- Lab Assignments (4, equal weight) 25%
  - In lab assignments student will apply ideas from readings and lectures The first three lab assignments each consist of:
    - Technical tutorials in lab
    - Independent work
    - Written reflections
- Final lab assignment (Lab #5) 20%
  - This is an independent project focused on application of course concepts
  - Maps will be presented in research posters for peer critique in the final lab
  - Students will submit a final critique of maps of their peers
- Midterm exam (to be held during lecture session) 15%
  - Exam 1 will be of approximately 60 minutes worth of multiple choice, matching, and short answer questions, though you will have 50 minutes to complete it.
- Final Exam (TBD, scheduled during finals) 15%
  - Exam 2 will consist of approximately 90 minutes worth of multiple choice, matching, and short answer questions, though you will have 2 hours to complete it. Questions will be inclusive of the entire course.
- Attendance 10%
- Peer support/participation 10%

If you miss more than 15 minutes in total of any class, you will be marked absent.

## How to do well in this course

- Take care of yourself, and communicate with your instructor about the challenges you are facing
- Attend lectures and labs, take notes, and engage in the exercises
- Work with your peers and support each other
- Do the readings and complete the assignments by the due date
- Attend your lab section and complete the lab assignments
- Ask questions when you're feeling stuck!
- If you are concerned about any aspect of your academic program: make an appointment with a program counsellor in your degree program.
- If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance.
- Student Health and Wellness Services is available to provide medical attention and counselling services:  
<https://www.lakeheadu.ca/students/wellness-recreation/student-healthand-wellness/health-services/orillia>
- If you have a documented disability or think you may have a disability:
  - Student Accessibility Services (SAS) can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability. For more information see:  
<https://www.lakeheadu.ca/students/studentlife/student-services/accessibility>

## Other course policies

Office hours – Office hours will be held weekly on campus Thursdays from 3-4 PM and Tuesdays at the Orillia campus from 1-2PM. Additional email office hours will be available prior to tests and exams.

Email – Please please do not email questions that can be answered in lecture slides or the syllabus. If you email the professor, always use your LU email and include the course code as the subject line so that I know which of my classes you are emailing about. For lengthy questions, accommodations, absences and sensitive matters, please come to office hours.

Email office hours – Most emails will be responded to during weekly office hours. Additional email office hours will be available prior to tests and exams.

Behavioural guidelines – Appreciate that we are all teachers and learners, each with a unique life experience and distinct prior knowledge. Discuss, email, and listen with a spirit of respect for peers and those outside of class who pertain to the discussion.

Group work/collaboration – The weekly assignments are individual work, not group work. You may discuss concepts and questions in class and lab, but you must each perform your labs independently.

## Schedule (See D2L for assigned readings)

#	Lecture Topic	Lab
		All lab assignments due 5PM (Fridays) the week after they are assigned
1	Introduction to mapping fundamentals	
2	Map projections	Lab 1 Part 1: Sketch mapping

3	Measuring Earth: map scale, geodesy, and coordinate systems	Lab 1 Part 2: Sketch mapping
4	Spatial data models vectors and rasters	Lab 2: Intro to ArcGIS Pro and Georeferencing
5	Thematic mapping	Lab 2: Intro to ArcGIS Pro and Georeferencing
6	Data classification Symbolization	MIDTERM Feb 15 in lecture (covers lecture and lab material)
	Reading Week	Reading Week
7	Map design and planning	Lab 3: Data classification
8	The power of maps and ethics in mapping	Lab 3: Data classification
10	Spatial analysis	Lab 4: Spatial analysis
11	Remote sensing	Lab 4: Spatial analysis  Draft of Map due at 5PM the day of lab
12	Participatory mapping	Final Lab: Independent project: Peer evaluation

All lab sections will be held in-person

All labs (except for the final independent project must be submitted to the appropriate D2L Dropbox. Late assignments will only be accepted without penalty with prior approval. Otherwise, there may be a penalty of 10% of the assignment's value per day (including weekend days)