

GEOG*2480

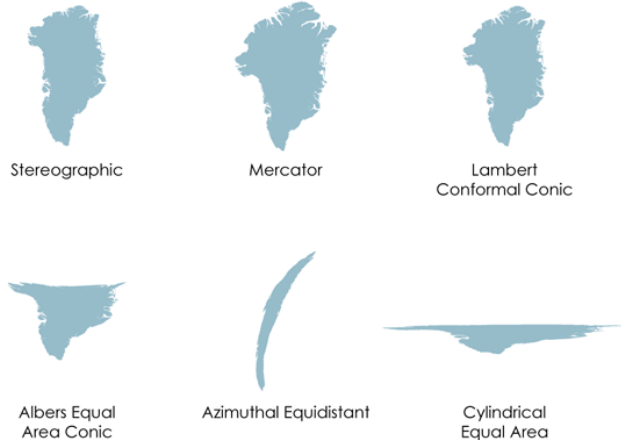
Mapping and GIS

PROVISIONAL

Winter 2027

University of Guelph

Department of Geography,
Environment and Geomatics



Projections of our 3-D world onto 2-D maps distort the relative size or shape of Earth's features – in this case, Greenland. Source: Axis Maps.

Instructor

Dr. Eric Nost | enost@uoguelph.ca

Office hours: TBD

Teaching Assistants

TBD

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. Identify and describe foundational concepts in Geographic Information Systems (GIS), including: data model, projection, scale, data classification, symbolization, overlay analysis, visual variables, and modeling.
2. Work independently in industry standard GIS software to implement key concepts
3. Appropriately apply concepts to new cases and contexts.
4. Develop a sense of yourself as an emerging geospatial professional by reflecting on different topics' career relevance, progress as a learner, and ethical dilemmas.

Description

All maps lie. They take our complex 3-D world and represent select parts of it on 2-D screens and pieces of paper. We usually take them at face value as sources of truth, when they are just as equally potential sources of misinformation. The good news is that map-makers have concepts that we can learn from and best practices that we can follow to minimize and make transparent maps' lies.



IMPROVE LIFE.

DEPARTMENT OF

**GEOGRAPHY,
ENVIRONMENT
& GEOMATICS**

2480 – Mapping and GIS | Winter 2027

This course introduces the use of GIS to effectively and ethically organize, query, analyze, and display spatial information. By completing instructional tutorials and a set of lab assignments, students will acquire core competencies in using GIS in a variety of contexts, including tracking land use change, mapping rare species distributions, and demonstrating environmental injustice.

The first part of this course focuses on the digital representation of real-world geographic features, in both the vector and raster data models. We will examine concepts of topology, scale, coordinate systems, geodetic datums, and map projections. Guidelines for effective map design are also highlighted, including data classification and symbolization methods for thematic maps. The second part of the course introduces spatial data analysis, especially overlay techniques for both vectors and rasters. Basic tools for (automated) geoprocessing are also introduced.

Organization

- Mondays – complete weekly reading and pre-quiz on your own time ahead of lecture
- Wednesdays – lectures on key concepts
- Fridays – tools and skills; complete weekly post-quiz on your own time after lecture
- Once a week – lab sections to work through assignments

Materials

There is no required textbook for this course. However, there are assigned readings, which will be made available through Courselink. Additionally, we will use ArcGIS Pro software, which can only be installed on PC computers but is available in HUTT and Library computer labs.



Schedule

Week of...	#	Topic	Lab Tutorial	Other Assignments
	1	Introduction to Mapping and GIS	Make a map	Career Reflection
	2	Spatial Data	Acquire data	
	3	Coordinate Systems	Projections	Application 1
	4	Joins and Queries	Table and spatial joins, attribute and location queries	
	5	Data Classification	Classify	Application 2
	6	Map Symbolization and Design	Symbolize	
		Winter Break		
	7	Spatial Analysis: Vector	Buffer and clip	
	8	Spatial Analysis: Raster	Map algebra	Application 3
	9	Spatial Statistics	Hotspots	
	10	Workflows: Modeling	Model Builder	Application 4
	11	Workflows: Programming	Python	
	12	WebGIS	WebGIS	Career Reflection
	13	Final Exam		



IMPROVE LIFE.

Evaluation

Evaluation in this course is based on the following assessments:

- Weekly quizzes (10%) - Learning Outcome (LO) 1
 - You will take one short quiz each Monday on the week's reading(s) and one short quiz each Friday on the material covered in lectures. These are not marked – you receive full credit simply for completing them. They will help you check your understanding of the course material and prepare for the final exam. Your two lowest weekly quiz scores will be dropped.
- Final exam (20%) - LO1
 - A sit-down, in-person exam featuring multiple answer, true/false, and short answer questions similar in nature to the weekly quizzes. Questions will be inclusive of the entire course.
- Tutorials (10%) - LO2
 - You will complete a series of tutorials to gain experience in implementing GIS techniques. These are designed to be doable within the two hours allocated to lab each week. You will typically turn in screenshots of the final product. Your two lowest tutorial scores will be dropped.
- Applications (50%) - LO3
 - Across equally-weighted assignments, you will apply the techniques you are learning through the tutorials to new contexts.
- Career reflection (10%) - LO4
 - In week 1 you'll turn in a brief statement on what you'd like to get out of this class – what kinds of techniques you'd like to learn and what kind of career opportunities you're interested in. In week 12, you'll submit another brief statement where you reflect on how you developed as a geospatial professional throughout the course.

Lab sections

In lab sections, TAs give a preview of each assignment, demo GIS tools, provide feedback on previous assignments, and help answer specific questions you may have. Since lab sessions are TAs' office hours, they are limited in their ability to respond to emails outside of lab sessions.

The tutorial and application assignments constitute an integral part of this course, and you will not do as well on them if you do not attend your weekly lab session. Please keep in mind that the Undergraduate Calendar [states](#) that “10 to 12 hours of academic time and effort per week (including classes) are expected for a 0.50 credit course.” This means you should expect to spend at least 5 hours a week outside of class and lab on the course readings and assignments.



IMPROVE LIFE.

DEPARTMENT OF
**GEOGRAPHY,
ENVIRONMENT
& GEOMATICS**

2480 – Mapping and GIS | Winter 2027

All lab assignments must be submitted to the appropriate section of Courselink. Late assignments will only be accepted without penalty with prior approval – please use the extension request form on Courselink. Otherwise, there may be a penalty of 10% of the assignment's value per day (including weekend days).

AI policy

Generative artificial intelligence (GenAI) tools such as ChatGPT are not strictly prohibited in this course. However, emerging research shows their use can [diminish](#) important student learning outcomes. GenAI use is permitted for coursework only in the following circumstances, and only with major caveats (user beware – what the chatbot tells you may not be accurate or relevant to the course):

- troubleshooting technical errors
- alternative explanations of concepts (e.g. if you learn best when everything is framed in terms of baking analogies - “the clip technique is like using a cookie cutter to cut out the dough in the shape you want”)
- suggesting spelling, grammar, or other minor stylistic changes to writing

Examples of prohibited uses:

- uploading course content to chatbots without permission
- asking AI to summarize readings or slides
- asking AI to complete any part of any assignment



IMPROVE LIFE.

DEPARTMENT OF

**GEOGRAPHY,
ENVIRONMENT
& GEOMATICS**

2480 – Mapping and GIS | Winter 2027

How to do well in this course

- Take care of yourself, and communicate with your instructor and TA about the challenges you are facing
- Attend lectures, take notes, and engage in the exercises
- Do the readings and complete the weekly quizzes
- Attend your lab section and complete the lab assignments
- Work through technical problems with the help of your classmates, TA, prof, online forums, and, when applicable, AI tools
- 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 to succeed academically: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist.
- 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 Services is located on campus and is available to provide medical attention.
- 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, including how to register with the centre please see the [SAS website](#).

A brief Q&A

Q: I have a question, who should I contact and how?

A: We've put together this flow chart to help you navigate who you should reach out to.



We will respond to your requests and questions as soon as we can. Please do not count on an immediate response, especially for important last-minute questions regarding assignments.

Q: I have to miss lecture or an exam/lab for a family/personal/medical emergency. What should I do?

A: For exams and labs, please get in touch as soon as possible using the extension request form on Courselink.

Q: I'm not happy about my exam or lab grade. Will you change it?

A: Please wait at least 24 hours / over the weekend. Sit on it and think about what exactly the problem is. Then, email your TA (labs) or Prof Nost (exams and quizzes) with a description of the issue and an argument for why your grade should be changed. For regrades, we reserve the right to either increase OR decrease your grade depending on what we find.

Q: I'm confused about the material—what should I do?

A: First off, don't feel embarrassed—few scholars, whether undergraduates or tenured professors - understand everything completely the first time! Please bring your questions to class and/or lab! If you are confused, it's likely that your classmates are, too. If you bring me questions, it helps me evaluate how best to help you learn the material. If you are still confused, please come to my office hours. I am glad to help!



IMPROVE LIFE.

DEPARTMENT OF
**GEOGRAPHY,
ENVIRONMENT
& GEOMATICS**

2480 – Mapping and GIS | Winter 2027



IMPROVE LIFE.

DEPARTMENT OF

**GEOGRAPHY,
ENVIRONMENT
& GEOMATICS**

2480 – Mapping and GIS | Winter 2027

What you can expect from me

- To help you not only understand but get excited about the material, learning as much as possible about mapping! We're all coming from different perspectives and starting points, meaning that it is everyone's responsibility, but especially mine, to work to provide a respectful and engaging learning environment. I'm here to work with you from where you are and build up your understanding of the course content.
- To provide prompt feedback on assignments.
- To give you a sense of the flow of the semester – when the assignment load will be heavier, so that you can prepare appropriately.
- To assist in developing your critical analysis and communication skills, through our assignments. These are skills that will be useful to you in both your chosen profession and as a citizen.
- To advise you on future coursework, jobs, grad school, and/or volunteering opportunities.

What I expect of you

- To treat each other with respect. Our virtual classroom is a safe space for all students, regardless of sex, gender, race, ethnicity, religion, age, sexual orientation, nationality, ability or disability. Every person is welcome here.
- To communicate with me about what you expect from the course, what you need, and your challenges.
- To put your best possible effort into this class.



IMPROVE LIFE.

DEPARTMENT OF
**GEOGRAPHY,
ENVIRONMENT
& GEOMATICS**

2480 – Mapping and GIS | Winter 2027

University of Guelph Policy Statements

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic Consideration.

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services (SAS) as soon as possible. For more information, contact SAS at 519-824-4120 ext. 56208 or visit the [SAS website](#).

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar.

E-mail Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly. E-mail is the official route of communication between the University and its students.

Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students.



IMPROVE LIFE.

DEPARTMENT OF
**GEOGRAPHY,
ENVIRONMENT
& GEOMATICS**

2480 – Mapping and GIS | Winter 2027

The regulations and procedures for course registration are available in their respective Academic Calendars.

- Undergraduate Calendar - [Dropping Courses](#)
- Graduate Calendar - [Registration Changes](#)
- Associate Diploma Calendar - [Dropping Courses](#)

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Undergraduate Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.