

GEOG*3440 GIS for Decision-Making

PROVISIONAL

Fall 2026
Department of Geography,
Environment and Geomatics
University of Guelph

T/TR 1-2:30p
MINS 103

Instructor
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Office hours: TBD

Teaching Assistant
TBD

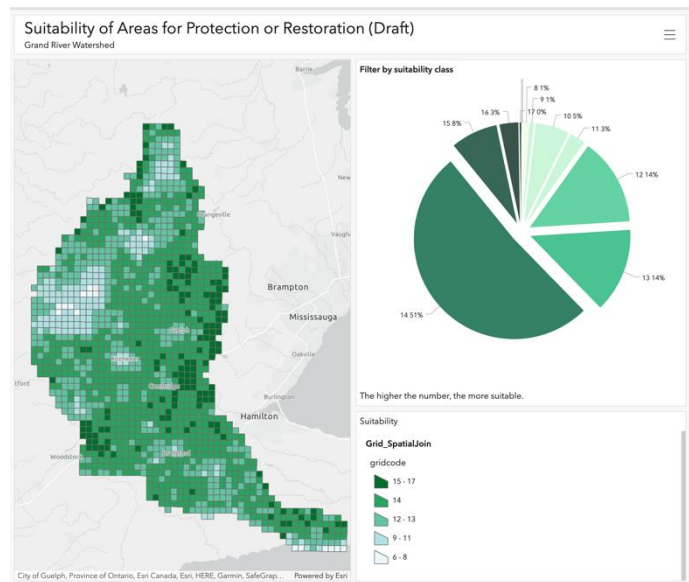
Learning Outcomes

By the end of this course, students will have learned how to:

1. Identify and describe key concepts behind the use of GIS in decision-making
2. Implement key concepts by designing both desktop and online maps and reports in industry-standard software
3. Apply acquired GIS for decision-making skills to new decision-making contexts
4. Develop a sense of themselves as advancing geospatial professionals by reflecting on different topics' career relevance, progress as a learner, ethical responsibilities and duties, and the roles maps can play in communicating science, persuading decision-makers, and provoking public dialogue

Description

This course trains students to use geomatics techniques as part of a decision-making process, and to critically reflect on the relationship between geospatial analysis and policy decisions in government, community, and corporate settings. Topics include: public and participatory GIS (PPGIS); webmapping; multi-criteria analysis; scenario mapping. Students will further develop their skills in industry-standard mapping software, apply these skills in practice to issues such as climate change, nature conservation, and public health, and reflect on subjects such as uncertainty that challenge spatial data-driven decision-making.





Organization

- Mondays – complete weekly reading and pre-quiz on your own time
- Tuesday lectures – concepts
- Thursday lectures – tools and skills
- Fridays – complete weekly post-quiz on your own time
- 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. We will also use ArcGIS Online, which can be accessed through a browser using most any operating system.

Weekly Schedule

Week of...	#	Topic	Lab Tutorial	Other Assignments
	1	Overview	ArcGIS Online	Career Reflection
	2	Suitability Modeling	Multi-Criteria Evaluation	
	3	Location Allocation	Location Allocation	
	4	Access	Catchment Areas	
	5	Network Analysis	Routing	RFP
	6	Enterprise GIS	Data Portals	
	7	Scenarios	InVEST	Proposal
	8	Spatial Statistics	Point Pattern Analysis	
	9	Uncertainty and Bias	Metadata	Analysis
	10	Public Participation GIS	Survey123	
	11	Indices	Dashboards	Public Comment
	12	Communication	StoryMaps	Career Reflection
		Final Exam		

Evaluation

Evaluation in this course is based on the following assessments:

- Weekly quizzes (10%) - Learning Outcome (LO) 1



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- 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.
- Tutorials (10%) - LO2
 - You will complete a series of tutorials to gain experience in implementing GIS for decision-making techniques such as network analysis. 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
 - Over the course of 4 equally-weighted assignments, you will step through a simulated decision-making exercise:
 - First, as a decision-maker, you will write a “request for proposals” - you will define the terms by which the analysis for an evidence-based decision must be done
 - Second, as a GIS consultant/analyst, you will select a classmate’s RFP and write a bid for it, describing the data you will use, and the anticipated analysis techniques intended and timeline
 - Third, you will then conduct the analysis – acquire suitable data, implement analysis, present results, and document your choices
 - Fourth, as a stakeholder, you will select a classmate’s analysis and develop a public comment, including a map, that illustrates a missing or alternative perspective
- 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.

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.



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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 sports metaphors - “suitability modeling is similar to picking your fantasy football quarterback based on touchdown, interception, and yardage statistics”)
- 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



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A brief Q&A

Q: How do I do well in this course?

A:

- Come to the lectures and lab and be present
- Do the week's readings in advance and complete the quiz
- Work through technical problems, with the help of fellow students, your TA, your prof, online forums, and, when applicable, AI tools.
- Ask questions when you're feeling stuck!

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

A: For "application" assignments, please get in touch as soon as possible using the extension request form on Courselink. For any assignment handed in late, there will be a penalty of 10% of the assignment's value per day (including weekend days). Lost files are not a valid reason for handing in a late assignment. Please remember that some of your lowest scores will automatically be dropped anyway, meaning that we cannot accommodate extensions on quizzes or tutorials.

Q: I'm not happy about my 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 with an explanation of the issue and an argument for why we should regrade your assignment. 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!



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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 technical, 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.



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University of Guelph Policy Statements

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.

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.](#)

Drop Date

Courses that are one semester long must be dropped by the end of the last day of classes; two-semester courses must be dropped by the last day of classes in the second semester. The regulations and procedures for [Dropping Courses](#) are available in the Undergraduate Calendar.

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.

Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 7 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

More information: www.uoguelph.ca/sas

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.



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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.](#)

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 [Academic Calendars](#) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g. final exam or major assignment).

For information on current safety protocols, follow these links: <https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/> <https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email. This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.