School of Science

GEOG 250 / RENR 201

Introduction to mapping and GIS / Introduction to geomatics technics

Term: Winter 2026

Number of Credits: 3

Course Outline

INSTRUCTOR: Cyrielle Laurent, M.ATDR
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INSTRUCTOR: Tara Howatt, PhD
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OFFICE: A2507, office hours by appointment

LECTURE: Tuesday and Thursday 1:00 - 2:20pm
LECTURE CLASSROOM: A2601
LAB: Wednesday 5:30 - 8:20pm
LAB CLASSROOM: A2702

COURSE DESCRIPTION

This course is an introduction to mapping and geographical information systems (GIS). Students will acquire a good foundation about coordinate systems and projections and be able to use these appropriately. Students will use maps in paper and digital formats and learn how to read and use them. They will learn the principles of data collection and data management, how to use datasets to create maps customized to various purposes. In this very hands-on class, we primarily use ArcGIS and we also explore some of the Google applications. Most of the labs are Yukon-centric and will provide concrete examples. At the end of term, students will be able to collect and download datasets, organize them in a simple database and create thematic maps.

COURSE REQUIREMENTS

Prerequisite(s):

- Good computer skills and working knowledge of the Windows operating environment on PCs,
- Basic understanding of geographical concepts (directions and location on a map, as well as basic knowledge of Yukon's geography)
- Basic understanding of simple statistics (average, mean, and standard deviation)

Cross-listed or Excluded Courses: RENR 201

In Winter 2026, GEOG 250, *Introduction to mapping and GIS*, is being offered at Yukon University concurrent with the University of Alberta's RENR 201, *Introduction to geomatics technics*, as part of the Northern Environmental and Conservation Sciences, B.Sc. Program. All students registered in GEOG 250 or RENR 201 must adhere to requirements outlined in this course syllabus. University of Alberta students must also be aware of, and adhere to, the University's Code of Student Behaviour, referenced in the outline; Yukon University students must be aware of, and adhere to, Yukon University's Academic Regulations, also referenced in the outline.

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at:
https://www.yukonu.ca/admissions/transfer-credit

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

- Explain essential cartographic principles (including coordinate systems and projections).
- Be able to use paper maps and digital maps to plot coordinates, measure distances, areas, etc.
- Differentiate the many uses of maps and choose appropriate type of map (topographic and thematic) for these various uses and purposes.
- Explain the basic methods of spatial data acquisition including, GPS and satellite images.
- Use spatial data to create maps adapted to various audiences and purposes.
- Be proficient in collecting (GPS and existing data), exploring, managing, querying, and analysing both spatial and tabular data in a GIS software package.

COURSE FORMAT

Weekly breakdown of instructional hours

The course will have two 1.5 hour lectures and a 3 hour lab each every week. Attendance AND participation at all activities is highly recommended. The material in this class is new to the majority of students (both in lectures and labs), catching up on class time is challenging. Participation to classes will be evaluated through in class activities and via questions and quizzes available on the course website.

It is expected that student will spend an additional 4-5 hours outside of class time every week for the successful completion of this course.

Delivery format

This class will be divided into weekly lectures and weekly labs. All class time will be delivered face-to-face. Participatory activities will be offered during the lectures to make it as interactive as possible. Some lectures can be offered in a workshop format where the students will be actively involved in discussing the course content. Exercises on lecture content will be available on the course website to offer additional ways of learning. Guest lecturers will be invited to share their experience about mapping and GIS with the students.

The labs are extremely hands-on, they will allow the students to fully understand the use of the theory taught in the lectures and put it into application. Labs will consist of Yukon focused exercises to provide a local context.

EVALUATION

	Percent
Lecture Assignments	10%
Class participation	5%
Midterm Exam	15%
Weekly labs	20%
Technical quiz	10%
Term project	20%
Final Exam	20%
Total	100%

Students must pass both the lecture component and the lab component in order to pass the course. For example, a passing grade in the lecture and a failing grade in the lab will result in failure of the course.

Lecture material will be evaluated with assignments of various types. Students will work on short essays for which they will do research to expand on the lecture material given in class and/or research the applicability of GIS in various disciplines. Additional, lecture material will be provided to the students on a weekly basis, as homework. There will be both individual assignments and group assignments. Group assignments are collaborative work where students work together and must be submitted as such.

Lab material will be evaluated primarily with weekly assignments. Additionally, a portion of the lab marks will be based on a mandatory term project.

There will be a midterm exam and a final written exam primarily evaluating lecture material, however, knowledge acquired in the labs material may be useful to provide examples during these exams.

Students who miss an exam will receive a zero mark for this exam. If under special circumstances (need a valid reason) a student cannot attend the exam, they must communicate with their instructor and make arrangement at least a week prior to the exam date. During exams, only calculators are permitted. No cell phone or laptop.

Late Policy

Due dates for all assignments will be clearly indicated on each assignment. Late assignments will have a penalty of 10% for the week (unless otherwise communicated by the instructor) and a mark of zero will be attributed after that. Students are granted a one-time late submission (within the week), no penalty, no questions asked. The one-time late submission does not apply to the lab term project or lecture assignment #3. Extension may be granted exceptionally and under special circumstances. Please communicate with your instructor **prior to the assignment due date**. Once the due date has passed no extension will be granted.

COURSE WITHDRAWAL INFORMATION

Refer to the YukonU website for important dates.

TEXTBOOKS & LEARNING MATERIALS

Open source e-book

Campbell J., Shin M,. (2011) Essential of Geographic Information Systems. Available at https://open.umn.edu/opentextbooks/textbooks/essentials-of-geographic-information-systems

Additional lecture material may be provided by the instructor on a weekly basis. Lecture content will be posted on the course website.

Participants will require the following: 16GB USB stick, pencils, eraser, 30 cm ruler, protractor, and calculator with basic trigonometric functions (sine, cos, tan).

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

Note that generative artificial intelligence tools such as Chat GPT can be useful in the same way as a web search or Wikipedia: they can be a starting point but cannot be used to do the work for you. Simply copying the output from something like Chat GPT and submitting it as your own work will be considered plagiarism the same as if you copied directly from a book, webpage, or classmate. Furthermore, appropriate referencing is expected in submitted work. If generative AI is used as part of your writing workflow, this must be indicated either as a footnote or endnote describing the use/purpose of the AI. Please be aware that generative AI cannot be used as a reference source itself. Chat GPT and similar tools are not actual sources of information and should not be referenced as such, much as you would not reference the results of a web search. References should be to the published scientific literature, or, when appropriate, to the popular scientific media.

ACCESSIBILITY AND ACADEMIC ACCOMMODATION

Yukon University is committed to providing a positive, supportive, and barrier-free academic environment for all its students. Students experiencing barriers to full participation due to a visible or hidden disability (including hearing, vision, mobility, learning disability, mental health, chronic or temporary medical condition), should contact Accessibility Services for resources or to arrange academic accommodations: access@yukonu.ca.

TOPIC OUTLINE

A detailed schedule with due dates will be provided to students during the first lecture. Topics that will be covered in this course include:

Module	Lecture Topic	Lab Topic
1	Introduction, mapping and GIS	
2	Map scale and distance finding, coordinate systems	Map reading
3	Projections and map distortions	Introduction to ArcGIS
		Map projections, UTM and Geographic coordinate systems
4	Types of data, cartography, geospatial relationships	Selecting features in GIS
5	Introduction to GIS analyses	Spatial analyses and field data
6	Types of maps	Creating a GIS database
		Making the appropriate type of map for the right type of data
7	Data management and data collection	Creating your own GIS datasets
8	Map quality and uncertainty	Performing basic GIS analyses
9	Land use and occupancy, and using a map in the field	Raster symbology