Yukon University

Course Outline

INSTRUCTOR: Cyrielle Laurent
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TIME : Tutorial – Monday 5-6pm, Lecture – Monday 6-8 :50pm, Lab – Wednesday 6-8:50pm
OFFICE HOURS: E-mail to schedule a time

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):

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

Cross-listed or Excluded Courses: RENR 201

In Winter 2022, 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

Lecture and lab are delivered in a 3-hour format each 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.

One hour of tutorial with the instructor is offered every week for additional support. Attendance to tutorial is optional, students are encouraged to use this hour when they need assistance with lab assignments.

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

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

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.

Due dates for all assignments will be clearly indicated on each assignment. Late assignments will have a penalty of 10% for the week and a mark of zero will be attributed after that. 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 exception will be granted.

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.

COURSE WITHDRAWAL INFORMATION

Refer to the YukonU website for important dates.

TEXTBOOKS & LEARNING MATERIALS

Campbell J., Shin M,. (2011) Essential of Geographic Information Systems.

Open source e-book 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.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations by contacting the Learning Assistance Centre (LAC): LearningAssistanceCentre@yukonu.ca.

TOPIC OUTLINE

Maybe subject to changes

Week	Lecture	Lab
1	Introduction, mapping and GIS	
2	Map scale and distance finding, coordinate systems	Map reading
3	Projections and map distortions	Introduction to ArcGIS
4	Geospatial relationships	Map projections, UTM and Geographic coordinate systems
5	Types of data, cartography	Selecting features in GIS
6	Data management and data models	Making the appropriate type of map for the right type of data
7	Workshop: special topic	Creating a GIS database
8	Mid-term	Creating your own GIS datasets
9	Global Positioning System (GPS) and maps	Term Projects
10	Map quality and uncertainty	Data collection. Feeding GPS data into GIS
11	Introduction to GIS analyses	Term Projects
12	Area and Volume Measurements	Performing basic GIS analyses
13	Review	Case study
14	Final Exam	Lab quiz