RENR 201 / GEOG 250

Introduction to Geomatic Techniques / Introduction to Mapping and Geographic Information Systems (GIS)

In Winter 2021, GEOG 250, *Introduction to Mapping and GIS*, is being offered at Yukon University concurrent with the University of Alberta's RENR 201, *Introduction to Geomatic Techniques*, 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.

INSTRUCTOR: Cyrielle Laurent

Casual Instructor, and Research Technician, GIS and Climate Change

OFFICE HOURS: By appointment

OFFICE LOCATION: YRC room NR 32

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FAX:

CLASS DAYS & TIMES: Lecture: Monday 5-6:30pm Lab: Wednesday 5:30-8:30pm

Tutorial: 1h to be determined with students

CLASS LOCATION: Lecture: Zoom, online classroom Lab: 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.

STUDENT LEARNING OUTCOMES AND COMPETENCIES:

Upon successful completion of this course students will be able to do the following:

- 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 (3-1-3):

This class will be divided into weekly lectures and weekly labs. The lectures will be divided into 1.5 hours in the virtual classroom with the instructor for theory delivery, and 1.5 hour of self-paced activities for students to further their knowledge and understanding of the theory. Exercises on lecture content will be available on the course website. 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.

COURSE PREREQUISITES AND/OR CO-REQUISITES:

For all students:

- 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)

For students taking the course as RENR 201: Registration in Yukon University/University of Alberta B.Sc. in Environmental and Conservation Sciences degree program.

REQUIRED TEXTBOOKS/MATERIALS:

Open source e-book:
Campbell J., Shin M,. (2011) Essentials 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).

COURSE WEBSITE

Course material will be posted on Moodle with one website for the lectures and one for the labs. The gradebook in the lecture website will comprehensive and include the labs grade as well. All assignments and submission will be done on the website for both lectures and labs.

Students can use YukonU's knowledge base to learn ho to use Moodle. https://www.yukonu.ca/knowledgebase

YUKON UNIVERSITY ACADEMIC STANDARDS AND REGULATIONS

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/ Admissions & Registration web page.

Plagiarism

Plagiarism is a serious academic offence. Plagiarism occurs when a student submits work for credit that includes the words, ideas, or data of others, without citing the source from which the material is taken. Plagiarism can be the deliberate use of a whole piece of work, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Students may use sources which are public domain or licensed under Creative Commons; however, academic documentation standards must still be followed. Except with explicit permission of the instructor, resubmitting work which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the University.

UNIVERSITY OF ALBERTA ACADEMIC INTEGRITY AND CODE OF STUDENT BEHAVIOUR

Academic Integrity

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Code of Student Behaviour

All students at the University of Alberta are subject to the Code of Student Behaviour, as outlined at: http://www.governance.ualberta.ca/en/CodesofConductandResidenceCommunityStandards/CodeofStudentBehaviour.aspx Please familiarize yourself with it and ensure that you do not participate in any inappropriate behavior as defined by the Code. Key components of the code include the following statements.

30.3.2(1) No Student shall submit the words, ideas, images or data of another person as the Student's own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

30.3.2(2) c. No Student shall represent another's substantial editorial or compositional assistance on an assignment as the Student's own work.

PROFESSIONALISM AND CLASSROOM RULES OF ENGAGEMENT

Students are expected to attend all lectures and labs, be engaged and courteous in all course activities, and to be on time for class. Respect of your classmates and instructor is expected. Please do not use cellular phones during class. Laptops are permitted for note taking and in-class work; however, please do not use laptops in class for non-class-related activities. While in computer labs, students are expected to refrain from using the computers to engage in non-class-related activities (e.g. Facebook, etc.).

COURSE REQUIREMENTS/EVALUATION:

Attendance and Participation

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.

Assignments

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. Students are expected to spend at least 3 hrs/wk on lab assignments.

All assignments for this course are mandatory.

Exams

There will be a midterm exam and a final written exam primarily evaluating lecture material, however, knowledge acquired in the lab 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.

Due Dates and Late Assignments

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.

Evaluation

The course grade will be determined as follows:

Students enrolled in the course as GEOG 250 or RENR 201:

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

Assignment of grades

The total numerical score will be converted to a grade on Yukon University's letter grading system.

ELECTRONIC DEVICES:

During exams, only calculators are permitted. No cell phone or laptop.

RECORDING OF LECTURES, LABS, ETC.:

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Please note that some classes may be recorded using web conferencing software, and links to recordings may be posted on the class website.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon University recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon University program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukonu.ca/yfnccr.

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. If a student requires an academic accommodation, they should contact the Learning Assistance Centre (LAC): lac@yukonu.ca.

EQUIVALENCY/TRANSFERABILITY:

GEOG 250 transfers as:

SFU GEOG 3XX (3)	UBC GEOG 200 level (3)
UNBC GEOG 300 (3)	UVIC GEOG 200 level (3)
TRU GEOG 275 (3)	TWU GEOG 390 (3)

For current information on course transferability see http://www.bctransferguide.ca

TOPIC OUTLINE

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	M**id-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