

Division of Applied Science & Management

GEOG 250

3 Credit Course

Winter, 2020



## **COURSE OUTLINE**

**GEOG 250 / RENR 201**

**INTRODUCTION TO MAPPING AND GEOGRAPHIC INFORMATION SYSTEM /  
Introduction to Geomatics Technics**

**3 CREDITS**

PREPARED BY: Cyrielle Laurent, GIS specialist  
APPROVED BY: Stephen Mooney, Interim Dean

DATE: April 30, 2019  
DATE: December 13, 2019

APPROVED BY ACADEMIC COUNCIL: August 21, 2019

RENEWED BY ACADEMIC COUNCIL: Click or tap to enter a date



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GEOG 250 Introduction to Mapping and Geographic Information System  
REN201 Introduction to Geomatics Technics

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<b>INSTRUCTOR:</b> Cyrielle Laurent	<b>OFFICE HOURS:</b> By appointment
<b>OFFICE LOCATION:</b> YRC room NR32	<b>CLASSROOM:</b> TBD
<b>E-MAIL:</b> clarent@yuloncollege.yk.ca	<b>TIME:</b> Tutorial - Monday 5 to 6pm (optional) Lecture - Monday 6 to 9pm Labs - Wednesday 5:30 to 8:30pm
<b>TELEPHONE:</b> 867-668-8849	<b>DATES:</b> January 6 <sup>th</sup> , 2020 to April 26 <sup>th</sup> , 2020

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#### **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.

#### **PREREQUISITES**

None

#### **RELATED COURSE REQUIREMENTS**

- 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)

## EQUIVALENCY OR TRANSFERABILITY

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>

## 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

This class will be divided into weekly lectures and weekly labs. Participatory activities will be offered during the lectures to make it as interactive as possible. Some lectures will 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.

## ASSESSMENTS:

### **Attendance & 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.

### **Lecture 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. Participation to workshops will also be part of the evaluation. Additional, lecture material will be provided to the students on a weekly basis, as homework.

### **Lecture quizzes**

Quizzes will be available on course website, student will have a limited amount of time to answer the questions. Quizzes will test material that has been 'covered' in previous classes and labs. These quizzes are intended to confirm mastery of fundamental concepts. The lowest quiz mark will be dropped from the final mark.

### **Lab assignments**

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. Students will need to complete lab assignments on their own time using library reserve material and scheduled computer lab time.

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. Assignment are mandatory ALL assignment must be handed in.

### **Lab term projects**

All students will complete a term project by drawing on both laboratory and lecture material.

There will be a midterm exam and a final written exam primarily evaluating lecture material, however, some lab material may be assessed during these exams. Students must achieve a weighted average of 50% or better to pass the course. However, given that this is, fundamentally a "skills" base course, students should strive for mastery of the skills. Mastery would imply an average of better than 70%.

Students must pass **BOTH THE LAB AND LECTURE PORTIONS** in order to receive a passing grade for the course.

**EVALUATION:**

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

**REQUIRED TEXTBOOKS AND 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 AND STUDENT CONDUCT**

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 College.

### YUKON FIRST NATIONS CORE COMPETENCY

Yukon College 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 College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see [www.yukoncollege.yk.ca/yfnccr](http://www.yukoncollege.yk.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 College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC): [lac@yukoncollege.yk.ca](mailto:lac@yukoncollege.yk.ca).

### TOPIC OUTLINE (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	<b>Mid-term</b>	Creating your own GIS datasets
9	Global Positioning System (GPS) and maps	Term Projects

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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	<b>Final Exam</b>	Lab quiz