

# Maps, Satellites and the Geospatial Revolution (GEOM 1004)

Department of Geography and Environmental Studies, Carleton University, Fall 2018



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**Lectures:** Mondays, 14:35 am to 16:25 am, TB210

**Laboratory sections:** Section A1: Tuesdays 8:35 pm to 10:25 pm, Loeb A200  
Section A2: Wednesdays 8:35 am to 10:25 am, Loeb A200  
Section A3: Tuesdays 11:35 am to 13:25 am, Loeb A200

**Teaching Assistants:** See cuLearn for TA contact information and office hours.

## I. Course Description:

Introduction to the creation and use of maps using a variety of geospatial tools to better understand and resolve physical, social and environmental problems. Overview of geomatics (cartography and map design, geographic information systems, GPS, remote sensing).

**II. Preclusions:** Precludes additional credit for GEOM 2004 (no longer offered).

## III. Learning Outcomes:

- To become familiar with the core sub-disciplines in the broad field of geomatics, including cartography, global positioning system applications, geographic information systems, and remote sensing.
- To develop an appreciation for how geospatial tools are used, and how they are shaping the way we make decisions.
- To develop practical, hands-on skills in cartography, GPS data collection and mapping, introductory GIS analysis, and introductory remote sensing and to learn how they can be used to help solve social and environmental problems.

#### IV. Textbook:

We will use the free, open-source e-text “Essentials of Geographic Information Systems” available at: <https://www.saylor.org/site/textbooks/Essentials%20of%20Geographic%20Information%20Systems.pdf>

A detailed explanation of the required readings will be posted on cuLearn on a week-by-week basis.

**V. Course Calendar:** Please refer to the last page of this course outline for details. The schedule may require minor revisions to accommodate unexpected scheduling issues.

#### VI. Course Evaluation:

Students will be evaluated on the basis of five components:

Laboratory Assignments:	50%
Midterm tests:	20%
Final Lab exam:	15%
cuPortfolio entries:	15%
<b>Total:</b>	<b>100%</b>

*Laboratory Assignments:* There will be seven assignments in total. ***These are normally due 1 week after the lab period in which they are distributed, unless otherwise noted. The assignment reports must be received by the start of the lab period of the day on which they are due.*** If you arrive late to a laboratory period on an assignment due date, it will be considered late and will be penalized by -10% of the maximum assignment grade. Weekends count as 2 days. It is better to attend the lab period on time and receive proper guidance on the subsequent laboratory assignment, and accept the late penalty for the previous assignment!

*Midterm tests:* These will take place the weeks of October 8<sup>th</sup> and Nov 26<sup>th</sup> during the regularly scheduled lecture periods. Both tests will consist of four sections: (1) multiple-choice; (2) short definitions; (3) fill-in-the blanks or quick-calculations; and (4) short-answer questions. You will receive further guidance on these tests during lecture.

*Laboratory Exam:* This will happen the week of November 19<sup>th</sup> during your laboratory session. It will involve a 2 hour computer-based test in which you will answer multiple-choice and short answer questions and you will be required to use mapping software to come up with some of your answers.

*cuPortfolio:* cuPortfolio is an electronic portfolio where students document their skills, knowledge and learning process (<https://carleton.ca/teachinglearning/2017/cuportfolio-what-is-it-and-why-is-everyone-talking-about-it/>). The content will be accessible to you after the course and can be easily shared with others. Over the course of the semester, you will make regular submissions to cuPortfolio. You will be given specific guidelines on the nature of these submissions and they will be evaluated throughout the term for a total of 15% of your final grade.

### *Purpose of Lectures, Readings and Assignments:*

The lectures, readings, and laboratory sessions and assignments are designed to complement and reinforce each other in meeting the course's learning objectives. Class lectures provide the fundamental structure for the course, including the presentation of key concepts and issues, case studies, audiovisual material, and additional content not found in the textbook. The required readings in the textbook provide an overview of course topics, further examples, and additional material not addressed in class lectures. The laboratory assignments provide the opportunity to apply key methods and concepts introduced in the lectures and readings. An understanding of both class lecture material and required readings are needed to complete each assignment successfully.

The midterm exam and the final exam will include material from the required readings and class lectures, including audio-visual materials. Course content that is exclusive to the laboratory sessions will not be included in the exams. A **cuLearn** web site for this course has been made for students. Here you can access the course outline, lecture slides, assignment grades, occasional announcements, and contact information and office hours for the instructors and teaching assistants (TAs). To log in, go to cuLearn at <https://cuLearn.carleton.ca/>. Lecture slides will be posted on cuLearn for your reference following each lecture. Please note that lecture slides provide only a *partial* summary of the lecture material presented in class. Past experience indicates that class attendance has a significant impact on scores on the mid-term and final exams.

### *CSAS Skill Development Workshops*

This course has been registered in the Incentive Program offered through the Centre for Student Academic Support (CSAS). CSAS Skill Development Workshops are designed to help students cultivate and refine their academic skills for a university environment. To earn 5% marks towards attendance/participation you are expected to attend 5 workshops throughout the term in person or online.

Skill Development Workshops for the Fall 2018 term will be available starting **September 17<sup>th</sup>, 2018** and must be completed by **December 7<sup>th</sup>, 2017** to receive credit towards GEOM1004.

To see the complete Skill Development Workshop schedule, please visit mySuccess via Carleton Central. You can also view your CSAS Skill Development Workshop attendance history at any time by logging into mySuccess. In addition to the CSAS Skill Development Workshops hosted on campus, CSAS offers several online workshops. If you are interested in participating in an online workshop, you can enroll through the CSAS website: [carleton.ca/csas](http://carleton.ca/csas).

Finally, please review the Incentive Program participation policies. You can find more information about these policies here: [carleton.ca/csas/incentive-program/](http://carleton.ca/csas/incentive-program/).

If you have any questions related to the Incentive Program or the CSAS Skill Development Workshops, please contact the Centre for Student Academic Support at [csas@carleton.ca](mailto:csas@carleton.ca) or 613-520-3822.

### *Laboratory Sessions and Assignments:*

Laboratory assignments provide an opportunity to apply course concepts and get hands-on experience using geomatics tools. Assignments will be introduced during laboratory sessions by your teaching assistant, which usually includes a brief review of relevant course material and tips on how to successfully complete the assignment. While the assignments have been designed by the instructors, the TAs are responsible for organizing and running the laboratory sessions, for providing assistance during their office hours, and for grading assignments. Please seek assistance as needed, but keep in mind that their role is to facilitate learning and not to provide answers.

### *Assignment Scheduling and Due Dates*

There are seven laboratory assignments required for this course, which are all of equal weight. All assignments must represent individual work that is completed independently. Any form of plagiarism will be treated as a serious instructional offence in accordance with university policy (see below).

Students should come to laboratory sessions having done the required reading and ready to participate in discussions. Please bring your textbook and class notes to laboratory sessions.

The introduction, explanation and submission of laboratory assignments will adhere to the schedule at the end of this outline. *Please note that there will be no laboratory session the first week of class* - your first laboratory session will be during the week of September 10<sup>th</sup> on Thursday or Friday depending on which laboratory section you are in. Please review the class schedule on page 8 carefully, and check the due dates specified on the assignment handouts. The topic affiliated with a laboratory assignment will be introduced in the class lecture and required readings. Next, the assignment will be explained in the laboratory session. Finally, students will be expected to submit their completed assignments in accordance with the assigned due dates. Please be sure to carefully note the due date that is specified in the assignment handout.

Please refer to details regarding laboratory assignments and other laboratory activities provided in the course schedule on page 8.

### *Submission and Grading of Assignments*

Laboratory assignments must be handed directly to your TA at the *beginning* of your laboratory sessions. Assignments submitted on the correct day but after the laboratory session will be considered one day late. The penalty for late assignments is a **10 percent** per day past the assigned due date (including weekend days), unless accompanied by appropriate documentation such as an official medical note. Medical notes must specify the period of illness. To avoid penalty, the circumstances of a late assignment must be discussed in person or by email with your TA within three days of your return to campus. There are no exceptions to this late policy. In accordance with the Undergraduate Calendar, December 7<sup>th</sup>, 2017, is the *final* day to submit assignments.

## **VII. Instructional and Conduct Offences**

Carleton University has clear and firm policies regarding instructional and conduct offences. Instructional

offences include among other activities cheating, contravening examination regulations, plagiarism, submitting similar work in two or more courses without prior permission, and disrupting classes. Conduct offences apply in areas of discrimination and sexual harassment. Further information about the University's Academic Integrity Policy can be found at:

<http://www2.carleton.ca/studentaffairs/academic-integrity>.

Plagiarism is one kind of instructional offence. Examples of plagiarism include:

- Reproducing or paraphrasing portions of someone else's published or unpublished material, and presenting these as one's own without proper citation or reference to the original source;
- Submitting an assignment written, in whole or in part, by someone else;
- Using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- Failing to acknowledge sources through the use of proper citations when using another's works and/or failing to use quotation marks;
- Handing in "substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs."

For more information on how to cite sources, refer to the library web page "*Citing Your Sources*" available at <http://www.library.carleton.ca/help/citing-your-sources>. Plagiarism is a serious offence which cannot be resolved directly with the course instructor. The Associate Deans of the Faculty conduct a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They include sanctions ranges from a grade of zero for the assignment to suspension from your program of study.

Submit the original copy of your assignment to your TA, but please always *keep your own copy* of submitted assignments until after final grades have been posted for the course. For written answers to questions in the assignments, use complete sentences that demonstrate your ability to convey ideas in a clear and grammatically correct manner. Each assignment must be typed and should have a header with a title, your name, your student number, the course number, your teaching assistant's name, and the date of submission. TAs will mark the assignments and post grades on the course's CuLearn site. Students are responsible for checking their assignment grades on CuLearn. Any questions regarding assigned grades must take place in written form (i.e., email) **within 10 days** after the day that the assignments are returned in the laboratory. Students who fail to meet the above-outlined course requirements may be assigned an FND grade. Final grades are subject to the Dean's approval.

Late assignments are strongly discouraged, but can be submitted through the drop-box slot located at Room B342 of the Loeb Building. ***The name of the professors and your TA must be on the cover of your assignment.*** In addition, you must also follow the drop-box policy:

- Send an email to your TA, with a copy of your assignment attached, immediately after you drop the original paper copy of your assignment in the drop box.
- It is your responsibility to follow-up with your TA if needed to ensure that your email/assignment has been received.
- The paper copy of your assignment in the drop box will be the version used for marking purposes; the emailed copy will be used for verification purposes. The date when materials submitted through

the drop-box is not recorded, so sending the assignment as an email attachment is very important to ensure that the correct late penalty is applied.

- Always put the name of your professors and your TA on assignments submitted through the drop box.
- If the drop-box policy is not followed, the assignment will be marked as being received the day it is picked up from the drop-box, which could be one or more days after the actual submission.

### **Midterm Tests Policy:**

The midterm tests will be carried out in our regular lecture classroom and timeslot. If a student misses a mid-term test for a legitimate and unforeseen reason (e.g., illness) and appropriate documentation is provided (with contact information that allows for verification) a make-up exam will be rescheduled. This will only occur if the proper official medical or other applicable documentation is provided, and which indicates the specific date or time period when a student is not able to participate in academic activities. Accommodations will be considered for students who are incapacitated or otherwise unable to take part in academic activities on the day of the mid-term and/or the day before. In all other cases, students are expected to write the mid-term tests. If inadequate documentation is provided, the resulting grade for a missed mid-term will be zero. The final exam will be scheduled during the formal examination period by Examination Services. For any questions concerning the scheduling or procedures for the final exam, please consult their web page (<http://www2.carleton.ca/ses/exams/>).

### **Academic Accommodation:**

You may need special arrangements to meet your academic obligations during the term. You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www.carleton.ca/equity/>. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

Academic Accommodations for Students with Disabilities: “The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website ([www.carleton.ca/pmc](http://www.carleton.ca/pmc)) for the deadline to request accommodations for the formally-scheduled exam (if

applicable).

Please note – if you do not meet with your instructor to discuss your letter of accommodation we cannot guarantee your required accommodation. *It is your responsibility to approach one of us about this.*

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www2.carleton.ca/equity/>.

### **Campus Resources for Students**

Student Experience Office <http://www2.carleton.ca/seo/>

Health and Counselling Services <http://www.carleton.ca/health>

International Student Services Office <http://www.carleton.ca/isso>

Academic and Career Services <http://www.carleton.ca/sasc>

**COURSE SCHEDULE, GEOM 1004, Fall 2018 (details of the required readings will be posted on cuLearn).** Note that each class week begins with the lecture, followed by a laboratory meeting later in the week, depending on when your own section is held.

<b>Week</b>	<b>Date/Week of</b>	<b>Lecture topic</b>	<b>Laboratory session</b>
1	Sep 10	Introduction: Maps, satellites and the geospatial revolution	Introduction - Using Google Earth and GPS
2	Sep 17	Thinking spatially – key concepts	1. Mapping locations with GPS
3	Sep 24	Earth models, georeferencing and the global positioning system (GPS)	Work Period – complete lab 1
4	Oct 1	Coordinate Systems and Map Projections	2. Mapping Nunavut communities
5	Oct 8	<b>Midterm Exam II during lecture</b>	Work Period – complete lab 2
6	Oct 15	Introduction to geographic information systems (GIS) and vector data structures	3. Examining spatial data and spatial relationships
7	Oct 23	Introduction to cartography and cartographic design	Work period – complete lab 3
	Oct 29	<b>Reading Break – No Classes</b>	
8	Nov 5	Introduction to Raster GIS	4. Mapping spatial patterns
9	Nov 12	Introduction to Open Source GIS	Work Period – complete lab 4
10	Nov 19	An introduction to aerial photography and remote sensing	<b>Laboratory exam during regular lab periods</b>
11	Nov 26	<b>Midterm Exam II during lecture</b>	5. Introduction to Raster GIS and remote sensing
12	Dec 3	Lecture on UAV photogrammetry (last lecture, on Monday Dec 3)	Work period (complete lab 5)

Please note that lecture topics and assignment details are subject to change at the discretion of the instructors.