

Maps, Satellites and the Geospatial Revolution

GEOM 1004

Winter 2021

Department of Geography and Environmental Studies, Carleton University



Professors: Murray Richardson, PhD

Contact options:

- “Ask the instructor” on cuLearn
- Meet “face-to-face” online via zoom Link on cuLearn (Date and Time TBA)
- Email: murray.richardson@carleton.ca

Lectures: Tuesdays online (synchronous) via Zoom 2:35 pm to 4:25 pm. Normally, the online lecture period will not make use of the full period and will end early.

Laboratory periods: Tuesday, Wednesday or Friday online (synchronous) during the time indicated below for your section:

Section B1:	Tuesdays	9:35 am to 12:25 am
Section B2:	Fridays	2:35 pm to 4:25 pm
Section B3:	Wednesdays	2:35 pm to 4:25 pm

Note: Online meetings (lecture and lab) will take place over “Zoom”. To facilitate the setup and use of online breakout rooms, students will be required to setup a free Zoom account using their Carleton email address. Please refer to section VII for more information about setting up your Zoom account.

Teaching Assistants (office hours TBA):

Ambika Paudel, PhD candidate (AmbikaPaudel@cmail.carleton.ca)
Frederic Brieger, PhD candidate (FredericBrieger@cmail.carleton.ca)

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, GNSS, remote sensing).

II. Prerequisites: Prerequisites 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 navigation satellite 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, introductory remote sensing and to learn how they can be used to help solve social and environmental problems.

IV. Textbook:

We will use the following textbook by Bradley Shellito (must be 5th edition) extensively throughout the course and it is considered mandatory for all students (available online as e-book purchase or rental, and in hardcopy at the Carleton Bookstore):



A detailed explanation of the required readings will be posted on cuLearn on a week-by-week basis. Weekly quizzes will be based on assigned readings from this textbook and other online sources.

V. Course Calendar: Please refer to the course schedule posted on cuLearn for detailed timeline of course topics and assessments. The schedule may require minor revisions to accommodate unexpected scheduling issues.

VI. Course Evaluation:

Students will be evaluated on the basis of five components:

Geospatial Laboratory Assignments:	40%
Weekly Online Quizzes:	20%
Final Lab exam:	15%
ESRI Story Map Project:	15%
Lecture and lab attendance/participation:	10%
Total:	100%

Geospatial Laboratory Assignments: There will be up to six lab assignments in total. Due dates will normally be due two weeks after the assignment is introduced, on the night before your section's regular scheduled lab meeting. Assignments submitted after the due date will be considered late and will be penalized by -1% of the maximum assignment grade for a period of up to 7 days. After 7 days, no late submissions will be accepted, period. This is a firm policy. If you plan to submit late (up to 7 days), you do not need to notify the instructor and if you do you will not likely receive a response. Only extenuating circumstances such as an acute physical or mental health problem, accident or family emergency will be considered as a valid reason to extend the deadline without penalty. Please do not attempt to negotiate with the instructor over assignment submission deadlines unless your circumstance falls within one of these serious categories. Otherwise a -1% per day penalty is quite minor and you should simply accept it.

Weekly assigned resources with online quizzes: Online quizzes will be based on assigned course readings from the textbook and other resources including web-based resources such as websites and videos, and short videos by the instructor. Quizzes must be completed prior to the online lecture meeting date that follows the week in which they were assigned. You will have a set amount of time to complete each one. Once you start a quiz, you must complete it in the same session. It is best to complete your review of the readings and other assigned resources prior to starting the quiz to ensure you have enough time to finish all questions. Your overall quiz grade will be graded from the best 7 out of 9 quizzes. **Late quiz submissions will not be accepted, period.** If you miss a quiz deadline by accident or for another reason (other than a serious, verifiable, extenuating circumstance as described above), you should simply take advantage of this otherwise flexible assessment policy. Please do not attempt to negotiate with the instructor or TAs over quiz deadlines unless your circumstance falls within one of these serious categories.

Laboratory Exam: This will happen on **Tuesday April 13th** during the scheduled lecture period. It will involve a 100 minute computer-based test in which you will answer multiple-choice and short answer questions and you will be required to use GIS software to come up with some of your answers.

Story Map Project: [ArcGIS Story Maps](#) is an online platform for communicating engaging topics through maps, photos and written content. Over the course of the semester you will be working on your own individual story map during lab work periods. The specific topic will be up to you (e.g. documenting a recent trip you did, your favourite coffee shops/pubs around Ottawa, an "homage" to the neighbourhood you grew up in, or a story map that documents a social/environmental issue of interest).

You will receive additional guidelines early in the term. Your final story maps will be submitted through ArcGIS online.

Online Laboratory Sessions and Assignments:

The geospatial laboratory assignments provide an opportunity to apply course concepts and get hands-on experience using geomatics tools. Assignments will be introduced during the online laboratory sessions by your teaching assistant and /or the course instructor, which usually includes a brief review of relevant course material, software demonstrations, and tips on how to successfully complete the assignment. While the assignments have been designed by the instructors, the TAs are primarily 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.

Attendance and participation

Attendance at all online sessions (lectures and labs) is considered mandatory and will be used to assess your participation and attendance grade. A copy of the session recordings will be made available on cuLearn after the session for review purposes. However, attendance will be tracked via Zoom and through online polling and random times during the meetings. A free zoom account will be required using your Carleton email account and you must use it to join the sessions, in order for your attendance to be properly tracked.

VII. Other General Course Information

Weekly Course Structure

The typical weekly structure of the course, including typical activities and expectations are as follows:

- Complete textbook readings and other weekly assigned resources on your own schedule, prior to the lecture to which they are assigned;
- Complete online quiz associated with weekly assigned resources prior to attending lecture;
- Attend weekly lectures via Zoom at your designated time as shown at the top of this outline to receive weekly guidance and mini-tutorials and to interact with the instructor;
- Attend your online lab session via Zoom at your designated time as shown at the top of this outline to receive assignment instructions and technical help;
- Make use of “Ask your instructor” for course content and schedule related questions (if possible, please limit your use of email to the instructor; use it primarily for more personal issues that require discussion or to arrange an in person Zoom meeting);

Required Computer Software and Hardware

During this course you will make use of the following software and phone apps:

1. Google Earth Pro Desktop Version (free)
2. ArcGIS Pro v2.5 (student license available)

3. QGIS 3.14 (free)
4. Avenza Maps GPS App for iOS and Android (free version)

For more information about computing requirements to run the desktop GIS software packages (items 1-3 above), please visit: <https://www1.carleton.ca/geography/computing-requirements-for-dges-courses/>

For students using macOS, please refer to the note in the above link that pertains to you. Briefly, ArcGIS Pro only runs on the Windows platform, and you will need to install a Windows partition on your computer, or use Windows VM access with the installed software (instructions will be posted on cuLearn).

Please note – if you do not have a windows PC that meets the minimum hardware requirements VM access will be critical. You will receive instructions on how to use the university VMs during the first week of classes. Some students experience major lags when they try to use the VMs incorrectly, so pay attention to these instructions so you can get up and running as soon as possible.

Finally, it is highly recommended that all students have a dual monitor setup. You can attach a second monitor to a laptop or desktop computer for a relatively low cost and it will greatly facilitate following along during the practical laboratory sessions.

Understanding the purpose of online meetings, weekly assigned resources, quizzes and laboratory assignments:

The online meetings, weekly assigned resource with quizzes, and laboratory sessions/assignments are designed to complement and reinforce each other in meeting the course's learning objectives. Online meetings for "lectures" will be approximately 60-75 minutes and the instructor will be available afterwards to answer course related questions. These meetings will be synchronous ("live") online sessions conducted using "Zoom". The purpose of these meetings is not to impart all of the course theory as in a more typical lecture format, but to introduce key concepts for the week, to provide opportunities for student-instructor engagement, and to explain other aspects of the course as required. The weekly assigned resources cover the substantive theoretical concepts for introductory geomatics, and the quizzes are based on these resources and used to help students engage with and learn the material. The laboratory assignments will also take place online over "Zoom" through synchronous meetings with at least two teachers who will be able to help students individually or in small groups using "breakout rooms". Laboratory meetings and assignments will provide the opportunity to apply key methods and concepts introduced via the weekly assigned resources.

Student Zoom Accounts

To facilitate the use of breakout rooms during our online meetings please to sign up for a free zoom account (<https://zoom.us/signup>) **using your Carleton email address (this is critical to make breakout sections work properly)**. Next, download and install the "Zoom Meeting Client" (<https://zoom.us/download>) on your PC (if you've used Zoom already then most likely you have it installed on your computer as the web browser client will download automatically when you start or join

your first Zoom meeting). Each time you are joining a lecture or a lab session please use your first and last names as used in Carleton's records (like the ones on your Carleton's student card).

Privacy issues related to recordings of online meetings

The sudden switch to online learning creates potential privacy problems that we never had to worry about in the past. When we do synchronous video calls and we have cameras on, we are opening windows into our homes. Please respect that fact with all your fellow students and instructors. Do not record people without their permission, and do not distribute recordings that may be made available by the instructor, to anyone outside of the course. Remember, it's not just the course materials any more, now it is also recordings of what was said and seen and shown by all of your classmates. If you have any concerns about privacy, don't hesitate to bring them up with the instructor.

Finally, we ask all students to provide permission for these recordings, under the conditions outlined above, i.e. that the recordings only be used for the purposes of reviewing or getting caught up while taking this class. This permission will be requested in the "course outline review quiz" that all students are asked to complete, prior to our first online meeting.

Assignment Scheduling and Due Dates

There are up to six laboratory assignments required for this course. 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 attend the online "lecture" and laboratory sessions having done the required readings and ready to participate in discussions or lab activities.

The introduction, explanation and submission of laboratory assignments will adhere to the schedule that is posted on cuLearn. *Please note that there will be no laboratory session the first week of class - your first official laboratory session will be during the week of January 18th.* Please review the class schedule carefully. The topic associated with a laboratory assignment will be introduced through the weekly assigned resources. Next, the assignment will be explained in the online laboratory session. Finally, students will be expected to submit their completed assignments online in accordance with the assigned due dates.

Submission and Grading of Assignments

Assignments instructions will be distributed on cuLearn in .PDF format, with detailed instructions. Answers will be submitted entirely online for each assignment. In some cases, you will upload a .PDF of your assignment report to cuLearn, for grading. In other cases, each question in the assignment .PDF will be numbered and duplicated in the online version of the assignment in cuLearn where you will be required to enter your responses (e.g. numeric, multiple choice, or written answer). Each assignment must be completed and submitted by Sunday evening on the week that they are due as indicated in the course schedule.

For questions requiring written answers, it is highly recommended that you enter your answers into a word processor, not only to serve as a backup, but also to make use of the spell-checker. Poor writing and grammatical/spelling errors will be penalized. TAs will mark your responses to the questions and grades will be posted 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.

VIII. 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.

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 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 (<https://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 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/>.

Carleton University has suspended the need for a doctor’s note or medical certificate until further notice when requesting academic accommodation related to COVID-19. Students should complete the self-declaration form available on the Registrar’s Office website to request academic accommodation for missed course work including exams and assignments. Here is the link to the form:

<https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>.

For more information about deferrals for final exams/take-home exams please see these websites: <https://carleton.ca/registrar/deferral/> and <https://stuapps.carleton.ca/sarms/registrar/deferral>. Please note that students may also submit a COVID-19 self-declaration form instead of a medical note for these deferrals.

Students are encouraged to connect directly with their instructors to discuss required accommodations arising from the COVID-19 situation. Equity and Inclusive Communities and Academic Advisors can also be reached if students are unable to reach out to instructors directly.

The Senate has approved the optional conversion of one 0.5 credit passing grade to Satisfactory (SAT) for the Winter 2021 term. SAT/UNS grades are not used in the calculation of CGPA, which means that changes in academic performance due to the current disruption will not affect students’ permanent records. More information can be found at: <https://carleton.ca/academicadvising/faqs-about-sat-uns/>.

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 Advising <https://carleton.ca/academicadvising/>
Career Services <https://carleton.ca/career/>