

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

Department of Geography and Environmental Studies, Carleton University, Fall 2016



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**Lectures:** Thursdays, 9:35 am to 11:25 pm, TB RM208

**Laboratory sections:** Section A1: Thursdays 14:35 pm to 16:25 pm, Loeb A200  
Section A2: Fridays 11:35 pm to 13:25 pm, Loeb A200  
Section A3: Fridays 8:35 pm to 10:25 pm, Loeb A200

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

## Calendar 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).

Precludes additional credit for GEOM 2004 (no longer offered).

## Course Objectives:

- 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 mapping, GIS analysis, and using satellite imagery and to learn how they can be used to help solve social and environmental problems.

**Required Textbook (Tentative – do not order yet as this is a draft outline):**

Jensen, John R., and Ryan R. Jensen (2012). *Introductory Geographic Information Systems*. Prentice Hall Series in Geographic Information Systems. Toronto: Pearson Education Canada.

The textbook is available at the university bookstore and at Haven Books (43 Seneca St., 613-730-9888). You can also “rent” an e-book for 180 days for about \$50. For this option, go to CourseSmart at “www.coursesmart.com” and follow the directions. The ISBN for the eBook is 9780321675736. You will need to use a credit card (please note that you will be charged in US dollars). A copy of the textbook will also be on reserve at the library for loans of up to two hours.

Note: A detailed explanation of the required readings (including both textbook and some additional reading material) on a week-by-week basis will be posted on cuLearn during the first week of class.

**Course Evaluation:**

Students will be evaluated on the basis of five components:

Laboratory Assignments:	45%
Online test:	10%
Midterm exam:	15%
Final Lab exam:	15%
Weekly Learning Response:	15%
<b>Total:</b>	<b>100%</b>

*Laboratory Assignments:* There will be seven assignments in total. These are normally due 1 week prior to the lab period in which they are distributed. 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. It is better to attend the lab period on time and receive proper guidance on the subsequent laboratory assignment, and accept the small late penalty for the previous assignment!

*Online test:* This will be a short online quiz during the week of February 16<sup>th</sup> (reading week). This will be completed on your own time as there are no classes that week. You will only have one hour to complete the test once you begin. Questions will be selected randomly from a larger pool of questions and also presented in randomized order so it is not advisable to work along side another student.

*Midterm exam:* This will take place on March 9th and will occur during the regularly scheduled lecture period. It 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 the final exam later in the term, including sample questions and study guidelines.

*Laboratory Exam:* This will happen in the week of (TBA) during your laboratory session. It will involve a 90 minute computer-based test in which you will answer multiple-choice and short answer questions and you will be required to use ArcGIS mapping software to come up with some of your answers.

**Weekly learning response (WLR):** This is a fast, 3-question, weekly cuLearn survey of what you learned, what you liked, and what remained unclear during this week/topic. It opens Mondays at 2:00 pm and is due the following Friday by midnight. The WLR is designed to help you review and communicate your learning outcomes or challenges for the week and provides the instructor with invaluable information about class progress and review requirements. WLR will be assigned any week in which a new lecture topic is started, beginning on January 12th, for a total of 7. You must answer a total of 5 of these 7 WLRs. Each WLR will be assigned a weight of 3 points and each question will have a weight of 1 point. At the end of the semester, the total score for all 5 WLRs will be averaged for the final grade item. Answers that show no effort for reflection of learning will of course not be counted; proper grammar and spelling are appreciated but not evaluated.

**Course Schedule** – See last page of this course outline for details. The schedule may require minor revisions to accommodate unexpected scheduling issues.

**Required Readings** – Required weekly readings will be posted on cuLearn and will consist of pages from the textbook or other supplemental material, typically from online resources.

### **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.

## **Learning Support Services Incentive Program**

This course has been registered in the study skills Incentive Program offered through Learning Support Services (LSS), which gives you an opportunity to earn bonus marks for your final grade. For each Study Skills workshop you attend throughout the term, you will earn a 1 percent bonus mark, up to a maximum of 5 percent. If a student has not completed 5 workshops by end of term, LSS will not provide a 1-on-1 session as a substitution. (Please note that it is the student's responsibility to sign in for workshops, if you do not sign the attendance record, you will forfeit the bonus mark for your workshop participation.) The goal of attending study skills workshops in LSS is to expand and refine your academic skill set. There are 15 different workshops to choose from. Topics include: Academic Reading, Balancing Work and School, Critical Thinking, Note-Taking in Lectures, Preparing for Exams, and Writing Reports, among others. Workshops will become available starting in mid-september and must be completed by end of November to receive credit for the Incentive Program. You will need to bring your Carleton ID card with you to each workshop.

All workshops are held in room 402 in the MacOdrum Library. To see the complete workshop schedule and to preregister (although not mandatory) please login to Carleton Central, and click on the SASC Learning Support Services – workshops link under the mySuccess tab. Also note that if you attend 5 or more workshops you will earn your *Skills for Academic Success Certificate* which can be added to your co-circular record (but for this course a maximum of 5 bonus points can be earned).

### **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 on September 15, 17 or 19, 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 weekends), 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, April 8<sup>th</sup>, 2015, is the *final* day to submit assignments.

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 Examination Policy:**

The midterm examination will be carried out in our regular lecture classroom and timeslot. If a student misses the mid-term exam 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 exam. 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/>).

### **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. For an accommodation request the processes are as follows:

*Pregnancy obligation:* write to us 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. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>.

*Religious obligation:* write to us 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. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>.

*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 us your Letter of Accommodation at the beginning of the term, and **no later than two weeks before** the mid-term exam or any assignment requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with your instructor to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled final exam at <http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/>.

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.* Accommodations for the final examination, however, will be managed by examination services.

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>

Student Academic Success Centre <http://www.carleton.ca/sasc>

**COURSE SCHEDULE, GEOM 1004, Fall 2016 (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.

Week	Date/Week of	Lecture topic	Laboratory session
1	Sep 5	Introduction: Maps, satellites and the geospatial revolution	<i>No laboratory meeting</i>
2	Sep 12	Thinking spatially – key concepts	Introduction - Using Google Earth and GPS
3	Sep 19	Earth models, georeferencing and the global positioning system (GPS)	1. Mapping locations with GPS
4	Sep 26	Coordinate Systems and Projections	2. Using topographic maps
5	Oct 3	An introduction to geographic information systems (GIS)	3. Examining spatial data and spatial relationships
6	Oct 10	An introduction to cartography	4. Mapping spatial patterns
7	Oct 17	Spatial analysis using GIS	5. Vector Geoprocessing
	Oct 24	<b>Reading Break – No Classes</b> Online midterm quiz to be completed on your own time	
8	Oct 31	Spatial analysis using GIS	6. Introduction to Raster GIS
9	Nov 7	<b>Midterm Exam During Lecture</b>	<i>No laboratory meetings</i>
10	Nov 14	An introduction to aerial photography and remote sensing	7. Introduction to remote sensing image analysis
11	Nov 21	Guest Lecture	<i>Laboratory exam</i>
12	Nov 28	Conclusion and Review	<i>No laboratory meetings</i>

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