

GEOG 482 LEC 01 Geographic Information Systems & Science

 Winter 2022 classes: January 10th – April 12th, 2022

GFC HOURS (3-2)

Section	Days	Time	Location
LEC 01	TBA	TBA	Web-based
B01	TBA	TBA	Web-based

Instructor: Geoff Hay	Office: (Working off Campus – contact by email)
Telephone:	Email: gjhay@ucalgary.ca
Email communication will be through your UCalgary email address.	Office hours: By appointment only.

The **Department of Geography** condemns the longstanding and continued injustices against those marginalized by racism, sexism, homophobia, transphobia, classism, xenophobia, able-bodied normativity, mental health profiling, and other forms of prejudice. We are pained by the fact that injustices are unevenly borne. <https://arts.ucalgary.ca/news/anti-racism-statement>

Territorial Acknowledgement

The Department of Geography would also like to acknowledge the traditional territories of the people of the Treaty 7 region in southern Alberta. The City of Calgary is also home to Métis Nation of Alberta, Region III. <https://www.ucalgary.ca/indigenous/cultural-protocol>

Official Course Description

The technical and theoretical foundations of Geographic Information Science. Explorations of data types and structures, data integrity, metadata, data acquisition and maintenance, analytical techniques, and methods for geovisualization will be explored in lecture and laboratory.

Course Objectives

This intermediate-level course about geographic information systems (GIS) focuses on geospatial data management and spatial analytics for continuous and discrete geographic features. Lecture material will emphasize Geographic Information Science (GISci) as a foundation that guides GIS data collection, analysis, and visualization. Students will become skilled at using industry-standard GIS software, such as the ArcGIS Desktop® software suite, through weekly computer laboratory exercises and online training.

Course Learning Outcomes

The Department of Geography is committed to student knowledge and skill development. The table below lists the key learning outcomes for this course, the program-learning outcomes to which they contribute, and the expected level of achievement.

Course Learning Outcomes	PLO(s)	Level(s)
Explain the two dominant models of geographic representation (discrete entities and continuous fields) and describe their relationship to the common spatial data models used in geography (raster and vector datasets).	3, 6	2
Describe the fundamental components of a vector dataset, including why topology is useful for data validation, analysis, and editing.	6	3
Describe the fundamental structure of a raster dataset, including multi-band and multi-dimensional data structures.	6	3
Recognize common coordinate systems and map projections, and appropriately transform geographic data between different coordinate systems and projections.	6	2
Acquire spatial data from public and institutional sources, distinguishing datasets captured from primary and secondary sources.	3	2

Assemble related spatial datasets and create and maintain geographic databases to manage these data in a geographic information system (GIS).	3	2
Identify sources of uncertainty in geographic data, trace their propagation through various forms of spatial analysis, assess and visualize their impacts on analytical outputs, and interpret results recognizing the effects of uncertainty	6	1
Recognize and describe the role of relational database management systems in GIS.	6	1
Competently employ the ArcGIS Desktop® software package to manage, analyze, and visualize geographic data.	4, 6, 7	2
Apply principles of Geographic Information Science (GISci) to select and utilize various GIS analysis techniques related to query, measurement, and transformations.	4, 6, 7	2
Apply principles of map design to create cartographic products that effectively communicate the results of GIS operations.	6, 7	2
Describe legal and ethical considerations about the use and dissemination of spatial information and GIS products.	3, 7, 8	1

**PLOs = Program Learning Outcomes: 1 = reflect and communicate diverse human-environment perspectives, 2 = identify and explain human-environment processes, 3 = implement sampling, data collection, analyses and communication methods, 4 = analyze spatial and temporal aspects of human-environment systems, 5 = employ knowledge, arguments, and methodologies for solving human-environment problems, 6 = evaluate geospatial data and manipulate it to create cartographic products, 7 = communicate geographic concepts using oral, written, graphic, and cartographic modes, and 8 = demonstrate literacy skills.*

***Levels: 1 = Introductory, 2 = Intermediate, and 3 = Advanced.*

Prerequisites

3 units from Geography 231, 380

Course Format

- This course format is based on a weekly asynchronous pre-recorded Zoom and PowerPoint lecture posted weekly to D2L as well as accompanying recommended readings and related lab materials.
- Based on the course schedule (forthcoming) the TA will post (on D2L) a brief overview lecture of the lab materials and requirements, including supplementary learning materials (i.e., videos, tutorials, etc.), due dates and a lab rubric to assist students in understanding how the labs will be graded and the quality of work required.
- The instructor and TA will also provide (forthcoming) links to an online environment (i.e., Slack, etc.) for group support and discussion.
- Students are invited to participate in this online support/discussion environment – but it is not mandatory.
- Respectful dialogue is required to participate in this discussion group, and students should expect Instructor/TA feedback with 24 hrs of posting questions/concerns. This service is not required by the UC but is provided by the Instructor/TA to assist with challenges during this online transition.
- Midterm and Final exams will all be online using D2L (more information in classes).
- The TA is responsible for all grading of the Labs. Please contact the TA regarding Lab concerns.
- Only email sent to the instructor using the course D2L tools will be answered.

Learning Resources

The Chang 2019 textbook (below) is **required** for this course. Please consider digital versions vs. paper versions as they can quickly be purchased online and downloaded immediately, can easily be searched and have less impact on the environment: see: <https://www.mheducation.ca/ise-introduction-to-geographic-information-systems-9781260092585-can-group>.

Additional details will be provided on D2L to purchase this text online. Please note that no hardcopy text has been ordered for the UC bookstore.

- Chang, K. 2019. *Introduction to Geographic Information Systems*, 9th Edition. McGraw Hill: New York, NY. 466 pp. ISBN: 1260092585 (recommended version)

Readings from other sources may be assigned – and posted on D2L. Additional readings will not require purchase.

Learning Technologies and Requirements

To successfully engage in their learning experiences at the University of Calgary, students taking online, remote, and blended courses are required to have reliable access to the following technology.

- A computer with a supported operating system, as well as the latest security and malware updates
- A current and updates web browser
- Webcam (built in or external)
- Microphone and speaker (built in or external) or headset with microphone

Broadband internet connection

Assessment Methods

Online training exercises	15% (5 x 3% each)
GIS lab assignments	40% (5 x 8% each)
One midterm test	15% (2hrs D2L exam begins Thursday March 03 - 10am, ends March 04 - 10am)
Final examination	30% (3hrs D2L exam – Scheduled by the Registrar)

The schedule for midterm tests, online training exercises, and the GIS lab assignments will be posted to the course web page on the university's Desire2Learn (D2L) system. Deadlines for assigned work are firm, and late submissions are not accepted (unless arrangements have been previously made with the TA/Instructor).

The Midterm (2hr) and Final exam (3hr) will allow related text, lab materials, personal computers, and course notes. It is expressly forbidden to communicate (i.e., converse, phone, call, talk, write, email, etc.) and or discuss exams and or their content with class members, while the exam is open. **The final exam will be scheduled by the Registrar.**

To pass the course, students **must receive a passing grade in both** the lecture component (i.e., combined scores from the midterm test and final exam) and the laboratory component (i.e., combined scores from the online training exercises and the lab assignments).

Students who miss a term test or assignment deadline will automatically receive a grade of zero (0) for that item in their course evaluation. If a student missed the test or assignment because of extenuating circumstances, they must contact the instructor immediately to discuss alternatives to the zero-grade received for the missed assessment. If a student knows they will be away on the date of the exam, they need to contact the instructor before the exam to make alternative accommodations. Deferred tests or assignments are not normally offered; students should consult with their instructor to determine what options exist to accommodate the missed assessment (see the University Calendar – Academic Regulations under section G.1.1 Course Assessments and Absences for procedures on missed term tests and assignments). If students abuse this opportunity, they will be referred to the Associate Dean's Office.

Grading System

96 – 100	A+	77 – 80	B	59 – 61	C-
90 – 95	A	71 – 76	B-	55 – 58	D+
86 – 89	A-	65 – 70	C+	50 – 54	D
81 – 85	B+	62 – 64	C	0 – 49	F

Flexible Grade Option (CG Grade)

<https://www.ucalgary.ca/pubs/calendar/current/f-1-3.html>

Course-Specific Administrative Policies and Procedures

This section describes the administrative policies and procedures that students are expected to follow for this course. If you have questions or concerns about these policies or procedures, please speak to your instructor immediately.

1. Please note that PowerPoint presentations of each course will be posted online and made available to students.

2. All materials presented in this course are examinable, including lecture slides, information presented verbally by the instructor during lectures, all assigned readings, supplementary materials posted to the course D2L page, online exercises, and lab assignments, etc.
3. One online midterm test and an online final exam (through D2L) will be assigned (**dates/times noted above**). It is mandatory that you complete each online test during the designated time. Students will be provided with a 24-hour window in which they can access and complete a timed online assessment. If students are unable to complete during this 24hr. period, please contact the instructor as soon as possible to make alternative arrangements.
4. If technical issues occur while taking an online exam, do not panic. Do your best to save your work and contact the instructor immediately so that we can arrange a solution to have you complete as soon as possible.
5. If you miss a term test or assignment deadline because of extenuating circumstances, contact your instructor immediately on your return to discuss alternatives to the zero grade you received for the missed assessment (see the University Calendar – Academic Regulations section G.1.1 Course Assessments and Absences for procedures on missed term tests and assignments). Please refer to <https://www.ucalgary.ca/registrar/registration/appeals/student-faq> for frequently asked questions concerning the provision of a medical note/statutory declaration.
6. You will be required to complete several assignments during this course. A due date and time will be posted on D2L for each assignment, and these deadlines are firm. If extenuating circumstances arise that will prevent you from completing an assignment by the deadline, you must request an extension from your lab Teaching Assistant at least one business day in advance of the deadline. Late submissions are not accepted.
7. All assignments must be submitted online through the course D2L page using the appropriate Dropbox provided for each of your assignments, and this is the only acceptable submission format (e.g., hardcopy or email submissions will not be accepted). **D2L will not permit you to submit materials beyond the posted deadline.**
8. The D2L submission system enables you to view your uploaded files to verify that they are correct and complete (if you don't know how to do this, please ask your TA to demonstrate it for you). In this course, **you are required to verify that your uploaded submissions are correct**. Requests to resubmit materials after a submission deadline has passed, or especially after an assignment has been graded, will not be granted – ensure that you have uploaded the correct materials after you submit your work.
 - a. Lab reports should be uploaded individually in one of the following formats: Microsoft Word (.docx or .doc), Adobe Acrobat (.pdf), or Real-text format (.rtf). Do not zip-archive your lab report or a grade penalty may be assigned.
 - b. The other files in your submission (e.g., data files, maps, etc.) should be zip-archived (.zip or .7z file), especially if there are multiple other files in your submission. If you are not sure how to create zip files, please ask your Teaching Assistant for a demonstration.
9. Your lab Teaching Assistant will be available for consultation and assistance by appointment only. (Remember, they are students, too, with their own busy schedule and work to complete). Also consider using the Geog 484 Slack channel to communicate with your TA.
10. **Plagiarism is a serious academic offence that will be vigilantly monitored and reported in this course.** Essentially, plagiarism can arise whenever a student submits material for evaluation that was not entirely their own work (e.g., copied from another student, “borrowed” from another source without proper citation, based on ideas that were not your own) and the source of that work was not appropriately acknowledged. All students in this course are required to review and become familiar with university policies and regulations regarding plagiarism and academic misconduct in the University Calendar.

Supplementary Fees

No supplementary fees will be assessed for this course.

Referencing Standard

In written work presented in this class, the accepted method for referencing the work of others will be the Chicago Manual of Style: <https://www.chicagomanualofstyle.org/home.html>

Important Dates

The last day to drop this course and receive a tuition fee refund is **Thursday, January 20th, 2022**. The last day to withdraw from this course is **Tuesday, April 12th, 2022**. No classes February 20 – 26th, 2022.

For additional detailed course information posted by the instructor, visit the course Desire2Learn page online at <https://d2l.ucalgary.ca/d2l/home>.

Writing support

Please note writing support resources provided by the Student Success Centre <https://ucalgary.ca/ssc/resources/writing-support> and the library <https://library.ucalgary.ca/guides/writinghelp>

University of Calgary Academic Integrity Policy

Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. The University Calendar includes a statement on the principles of conduct expected of all members of the university community (including students, faculty, administrators, any category of staff, practicum supervisors, and volunteers), whether on or off university property. This statement applies in all situations where members of the university community are acting in their university capacities. All members of the university community have a responsibility to familiarize themselves with the principles of conduct statement, which is available at: www.ucalgary.ca/pubs/calendar/current/k.html.

Plagiarism, Cheating, and Student Misconduct

The University of Calgary 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.

Academic dishonesty is not an acceptable activity at the University of Calgary, and students are **strongly advised** to read the Student Misconduct section in the University Calendar at: www.ucalgary.ca/pubs/calendar/current/k-3.html. Often, students are unaware of what constitutes academic dishonesty or plagiarism. The most common are (1) presenting another student's work as your own, (2) presenting an author's work or ideas as your own without adequate citation, and (3) using work completed for another course. Such activities will not be tolerated in this course, and students suspected of academic misconduct will be dealt with according to the procedures outlined in the calendar at: <https://www.ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-procedure>

For students wishing to know more about what constitutes plagiarism and how to properly cite the work of others, the Department of Geography recommends that they attend Academic Integrity workshops offered through the Student Success Centre: <https://www.ucalgary.ca/student-services/student-success/learning/academic-integrity>

Instructor Intellectual Property

Information on Instructor Intellectual Property can be found at <https://www.ucalgary.ca/legal-services/university-policies-procedures/intellectual-property-policy>

Freedom of Information and Protection of Privacy

Freedom of Information and Protection of Privacy (FOIP) legislation in Alberta disallows the practice of having students retrieve assignments from a public place, such as outside an instructor's office, the department office, etc. Term assignments will be returned to students individually, during class or during the instructor's office hours; if students are unable to pick up their assignments from the instructor, they must provide the instructor with a stamped, self-addressed envelope to be used for the return of the assignment.

Research:

Students will not participate as subjects or researchers on human subjects in this course.

Posting of Grades and Picking-up of Assignments

Graded assignments will be made available electronically through the course D2L webpage. Grades and assignments will not be available at the Department of Geography's main office and assignments cannot be dropped off at the Department Office.

Academic Accommodations

It is the student's responsibility to request academic accommodations, according to the university policies and procedures listed in the University Calendar.

The student accommodation policy can be found at: <https://www.ucalgary.ca/pubs/calendar/current/b-6-1.html>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/university-policies-procedures/accommodation-students-disabilities-procedure>

Students needing an accommodation based on a protected ground other than disability should communicate this need, preferably in writing to their instructor or the Department Head (email: freeman@ucalgary.ca).

Guidelines for Zoom Sessions

Zoom is a video conferencing program that will allow us to meet at specific times for a "live" video conference, so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

To help ensure Zoom sessions are private, do not share Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published with the instructor's permission.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the

principles of fairness, good faith and respect (as per the Code of Conduct). When entering Zoom or other video conferencing sessions (such as MS Teams), you play a role in helping create an effective, safe and respectful learning environment.

Please be mindful of how your behavior in these sessions may affect others. Participants are required to use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities. Instructors/moderators can remove those whose names do not appear on class rosters. Non-compliance may be investigated under relevant University of Calgary conduct policies (e.g. Student Non Academic Misconduct Policy). If participants have difficulties complying with this requirement, they should email the instructor of the class explaining why, so the instructor may consider whether to grant an exception, and on what terms. For more information on how to get the most out of your Zoom sessions visit: <https://elearn.ucalgary.ca/guidelines-for-zoom/>.

If you are unable to attend a Zoom session, please contact your instructor to arrange an alternative activity for the missed session (e.g., to review a recorded session). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in Zoom sessions. Students will be advised by their instructor when they are expected to turn on their webcam (for group work, presentations, etc.).

The instructor may record online Zoom class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a Zoom session. These recordings will be used to support student learning only and will not be shared or used for any other purpose.

Course evaluations and student feedback

Student feedback will be sought at the end of the course through the standard University Student Ratings of Instruction (USRI) and Faculty course evaluation forms.

Copyright Legislation

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright <https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy> and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Act.

Wellness and Mental Health Resources

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness, and academic success and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support, or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy website (<http://www.ucalgary.ca/mentalhealth/>).

Students requiring assistance are encouraged to email the **Student at Risk line** if they or others appear to need wellness assistance: sar@ucalgary.ca For more immediate response, please call: 403-210-9355 and select option #2.

Sexual Violence Policy

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. Please see the policy available at <https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>

Contact Information for Student and Faculty Representation

- Student Union VP Academic 403-220-3911, suvpaca@ucalgary.ca
- Students Union Representatives for the Faculty of Arts – 403-220-3913, arts1@su.ucalgary.ca, arts2@su.ucalgary.ca, arts3@su.ucalgary.ca, arts4@su.ucalgary.ca
- Student Ombuds Office information can be found at: www.ucalgary.ca/ombuds/

Emergency Evacuation/Assembly Points

Assembly points for emergencies have been identified across campus. Assembly points are designed to establish a location for information updates from the emergency responders to the evacuees; from the evacuated population to the emergency responders. For more information, see the University of Calgary's Emergency Management website: <https://www.ucalgary.ca/risk/emergency-management>. As this course is held online, no muster points have been designated.

Campus Safewalk

Campus Security, in partnership with the Students' Union, provides the Safewalk service, 24 hours a day, to any location on Campus, including the LRT station, parking lots, bus zones, and university residences. Contact Campus Security at 220-5333 or use a help phone, and Safewalkers or a Campus Security officer will accompany you to your campus destination.