

GEOG 482 LEC01 Geographic Information Systems

GFC Hours 3-2

Winter 2023 classes: January 9th – April 12th

Section	Days	Time	Location
LEC 01	MWF	11:00-11:50AM	ES 054
Lab 01	M	3:00-4:50PM	ES 307
Lab 02	T	8:00-9:50AM	ES 307

Instructor: Dr. Darren Sjogren	Office: ES 456
Telephone: 403-220-2575	Email: sjogren@ucalgary.ca (contact through D2L)
Email communication will be through your UCalgary email address.	Office hours: Monday 13:00-14:00 or by appointment.

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 Pro[®] 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)**
By completing this course a successful student will be able to:		
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 Pro® 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 GEOG 231, 380

Learning Resources

The following textbook is **required**. Testable readings will be provided out of this text.

Chang, K. 2019. Introduction to Geographic Information Systems, 9th Edition. McGraw Hill: New York, NY. 466 pp.

Required readings from other sources may be assigned – notifications will be posted online, and additional readings will not require purchase and be available through the UofC Library.

Assessment Methods

The following online evaluation components will be used to determine the overall grade in this course.

Component #1 – Examinations

Midterm (17 February 2023 – during the lecture period)	15%
Final exam (Registrar scheduled)	30%

Component #2 – Lab Assignments and Online Training

Online Training	15%
Lab assignments	40%

Notes:

1. There **IS** a Registrar scheduled final exam in this course.
2. To successfully pass this course, students must earn a passing grade for both Component #1 – Examinations **and** Component #2 – Lab Assignments and Online Training. For passing grades see Grading System below.
3. Only pens, pencils and erasers are allowed in exams. No other materials or devices are allowed.

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>

Late Assignments and Missed Tests

1. Missed tests (midterm or final exam) will automatically receive a grade of zero (0). If a student has missed a test, they must contact the instructor immediately to discuss whether accommodations can be made. If extenuating circumstances contributed to a missed test, the student will be required to complete a Statutory Declaration (see information below). Accommodations might include options such as assigning an alternate evaluation component or waiving the component and reweighting of the overall course grade, at the instructor's discretion (see the University Calendar – Academic Regulations section G.1.1 Course Assessments and Absences for procedures on missed term tests and assignments).
2. You will be required to complete several laboratory assignments and online training in this course. A due date and time will be posted for each assignment, and these deadlines are strict. If extenuating circumstances arise that will prevent you from completing an assignment by the deadline, contact your instructor or teaching assistant at least one business day before the deadline to discuss whether an extension can be granted. No extensions will be provided after the deadline without a Statutory Declaration (see below). Late submissions will be accepted at a penalty of 10% per calendar day, or any portion thereof, past the deadline (e.g., 1 hour late = 10% penalty, 24+ hours late = 20% penalty).
3. All assignments must be submitted through D2L following the instructions provided with the lab. Submissions which do not follow the instructions will be penalized or rejected entirely (e.g., email submissions will not be accepted).

Statutory Declarations

Please refer to the following for information on Statutory Declarations.

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

<https://www.ucalgary.ca/registrar/registration/appeals/student-faq>

Exams & Deferrals <https://www.ucalgary.ca/registrar/exams>

Referencing Standard

In written work presented in this class, the two accepted methods for referencing the work of others will be (1) Chicago Manual of Style: <https://www.chicagomanualofstyle.org/home.html> or (2) American Psychological Association:

<https://apastyle.apa.org/products/publication-manual-7th-edition>.

Important Dates

The last day to drop this course and receive a tuition fee refund is **Thursday, January 19th, 2023**. The last day to add or swap a course for Winter 2023 is **Friday, January 20th, 2023**. The last day to withdraw from this course is **Wednesday, April 12th, 2023**. Please note that the University is closed on **Monday, February 20th** for Family Day. Term break is **February 19th – 25th**. The University is closed **Friday, April 7th** and **Monday, April 10th** for Easter.

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

Resources and Writing support

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

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.

[University of Calgary : K. Integrity and Conduct \(ucalgary.ca\)](#)

Plagiarism, Cheating, and Student Misconduct

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 information on 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 regulates the return of term assessments. 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. 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. All assignments will be submitted through D2L. All grades will be available on the D2L gradebook.

Research

Students will NOT participate as subjects or researchers on human subjects.

Posting of Grades and Picking-up of Assignments

Graded assignments will be returned by the instructor or teaching assistant personally during scheduled lecture or laboratory periods unless they are made available electronically through the course D2L webpage.

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>

Within the first week of classes, students needing an accommodation because of a disability or medical condition should register with Student Accessibility Services [Accessibility | Home | University of Calgary \(ucalgary.ca\)](#) 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).

Use of internet and electronic devices in class

Use of the internet and electronic devices is allowed during class if the use is related to the course. Any use not related to the activities in GEOG 482 is prohibited.

Guidelines for Video Sessions

Video sessions may be used in the event of instructor absence, for work within peer groups, or for other communication related to course obligations. To help ensure video sessions are private, do not share link or password with others via any medium, including social media platforms. Links and passwords are only intended for students registered in the course. Recordings and materials presented, including any teaching materials, must not be shared, distributed, or published without 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 video conferencing sessions, 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 sessions visit: [eLearn @ UCalgary](#)

If you are unable to attend a 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 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 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 class session. These recordings will be used to support student learning only and will not be shared or used for any other purpose.

Media Recording (if applicable)

Refer to this document for guidelines. https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP_FINAL.pdf

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.

Accessibility

If Yuja is used for capture of lecture content, captioning will be available. <https://elearn.ucalgary.ca/category/yuja/getting-started-yuja/>

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

Mental health plays a pivotal role 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

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/legal-services/university-policies-procedures/sexual-and-gender-based-violence-policy>

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> . The muster point is ICT Food Court.

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.