

GEOG 647 LEC01 Advanced Research and Applications in GIS

GFC Hours 3-3

Winter 2023 classes: January 9th – April 12th

Section	Days	Time	Location
LEC 01	TR	11:00-12:15PM	ES 415
Lab 01	W	2:00-4:45PM	ES 415

Instructor: Darren Bender	Office: ES 338
Telephone: 403 220 6398	Email: dbender@ucalgary.ca
Email communication will be through your UCalgary email address.	Office hours: By appointment via Microsoft Teams

Official Course Description

Focus on advanced GIS applications in core areas; methodological developments in GIS, and current research directions in GIS.

Course Objectives

This course is designed for students with strong GIS knowledge and skills, and it examines advanced topics in GIS such as geodatabase design, enterprise GIS, web GIS and distributed GIS, designing GIS workflows, automating workflows, GIS scripting, and advanced spatial analysis techniques. The course will also provide learning opportunities for students to explore advanced topic areas that are of personal interest – each student will be given the opportunity to choose special topic areas to pursue individually, which will include an oral presentation and student-led classroom discussion.

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)**
Design and implement automated GIS workflows.	3, 4, 7	1, 2
Construct, execute, and interpret multi-criteria geospatial models.	3, 4, 5, 6, 7	2, 3
Create and deploy web-based GIS maps and services.	3, 6, 7	3
Design and deploy online geospatial dashboards and analytics.	3, 4, 7	2
Create, maintain, and visualize geographic data using enterprise GIS systems.	3, 6, 7	2
Design, populate, and manage enterprise-based multi-user geodatabases.	3, 5	2
Research an advanced topic area in GIS and describe its use and value to users.	4, 6, 7, 8	3
Prepare and deliver an oral presentation that effectively teaches and advanced concept, technique, and/or research area in the field of GIS.	4, 6, 7, 8	3

*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

Consent of the Department. Students must have strong GIS skills, such as the skills obtained in courses like GEOG 607 or GEOG 682, and they must be proficient with the ArcGIS Pro software suite.

Learning Resources

There is no required textbook for this course. Required readings will be made available and will draw from academic articles, technical documentation, and industry white papers.

Online Resources

This course will use a blended learning approach that combines online lecture materials with in-person lecture sessions with your instructor. The Microsoft Teams for Education online learning management system will be used to deliver online course materials and course administration (e.g., assignments, gradebook, group chats, etc.). *Note that Microsoft Teams will replace Desire2Learn (D2L) and Yuja for the delivery of online content in this course.*

Assessment Methods

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

Component 1 – Examinations & In-class assignments:

Midterm exam (in-class test: 16 March)	15%
End-of-term oral test (individually scheduled for 17 – 19 April)	15%
In-class assignments (worksheets, quizzes, etc.)	5%

Component 2 – Lab assignments & participation:

GIS lab assignments (weights vary with each assignment)	30%
Class participation and engagement	5%

Component 3 – Term project assignment:

Project proposal presentation (individually scheduled 14 – 16 March)	5%
Oral presentation (individually scheduled for 4 – 13 April)	10%
Term project report (due by 11:59 pm on 12 April)	15%

Note: To successfully pass this course, students must earn a passing grade for each of Evaluation Components 1, 2, and 3 above (see Grading System below). Students must also successfully complete all lab assignments to receive a passing grade in Component 2.

Details about each evaluation component, such as lecture topics, assignment topics and deadlines, participation expectations, etc., will be provided at the beginning of the course.

All assignment submissions must be completed online using the Assignments tool in the Microsoft Teams platform. Other forms of submissions (e.g., email submissions, submissions by private chat message) will not be accepted.

The midterm exam will be open-book. Students are welcome to consult any resource materials they like, including course notes, web pages, textbooks or other literature, etc. However, students may not communicate with another person during the examination. It is also required that students provide all written answers using their own words. If it is necessary to quote third-party sources, students are required to provide complete in-text citations and a complete reference list.

There is no registrar-scheduled final exam for this course, but students will complete an end-of-term oral exam between 17 – 19 April. An online booking system on Microsoft Teams will be available to schedule a date and time for each student to meet with the instructor to complete the exam (location TBD). The oral exam is closed-book.

Late Assignments and Missed Evaluations

Late assignments will be assessed a penalty of 2% per hour or portion thereof past the assignment deadline. If you anticipate that you will not meet a deadline for an assignment, 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, except in extenuating circumstances at the instructor's discretion; students may be required to provide supporting documentation, such as a statutory declaration (see the University Calendar – Academic Regulations section M.1 Supporting Documentation and the Use of a Statutory Declaration).

Assignment solutions are typically reviewed by the instructor immediately following the assignment due date. Thus, no late

submissions will be accepted beyond the meeting date and time when the assignment solution was discussed.

Missed exams or assignments will earn a grade of 0%. If a student has missed a required component of the course, they must contact the instructor immediately to discuss whether accommodations can be made. If extenuating circumstances contributed to a missed component, accommodations might include options such as waiving the component and reweighting of the overall course grade (see the University Calendar – Academic Regulations section G.1.1 Course Assessments and Absences for procedures on missed term tests and assignments).

Grading System

The following grading system will be used:

98 – 100	A+	80 – 84	B	60 – 64	C-
94 – 97	A	75 – 79	B-	55 – 59	D+
90 – 93	A-	70 – 74	C+	50 – 54	D
85 – 89	B+	65 – 69	C	0 – 49	F

All grades of "C+" or lower are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.

Flexible Grade Option (CG Grade) - see: <https://www.ucalgary.ca/pubs/calendar/current/f-1-3.html>

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

Referencing Standard

For all written evaluation materials submitted in this class, students may choose any recognized academic method for referencing the work of others, such as the Chicago Manual of Style (<https://www.chicagomanualofstyle.org/home.html>) or the American Psychological Association (APA) style guide (<https://apastyle.apa.org/>).

Use of internet and electronic devices in class

Students will use Windows-based computers heavily during the lecture periods in this course, especially ArcGIS software. Students are welcomed to bring personal laptops and other electronic devices into the classroom, provided they do not disturb or distract other students or the instructor (e.g., please remember to turn off cell phone ringers/notifications while in class).

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.

Supplementary Fees – Not applicable.

For additional detailed course information posted by the instructor, visit the course Microsoft Teams workspace after the course has commenced.

*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>

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. **Describe any guidelines you wish to include related to the submission of assignments.**

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 learning management system.

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).

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
- Broadband internet connection
- Optional technology: webcam (built in or external) / microphone and speaker (built in or external) or headset with microphone

Guidelines for Video Sessions

Video sessions maybe 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

Please refer to the following statement on media recording of students: 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

Course materials, lecture periods, and lab periods will present both visual and oral information that is required to understand the content of this course.

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, suypaca@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 the 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.