

**GEOG 485 LEC 01: Quantitative Analysis**  
**Winter 2022 classes: January 10<sup>th</sup> – April 12<sup>th</sup>, 2022**  
**GFC HOURS (3-2)**

Section	Days	Time	Location
LEC 01	TR	9:30-10:45AM	SB 142
Lab 01	T	8:00-9:50AM	ES 307
Lab 02	W	8:00-9:50AM	ES 415
Lab 03	F	14:00-15:50PM	ES 415

**Instructor: Greg McDermid**

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Office hours: Tuesdays 1:00-4:00 or by appointment

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Office hours: TBA

*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**

Introduction to quantitative research methodology, sampling and survey design in geography. Covers the background analytical techniques for an understanding of geographic literature. Examples will involve the use of statistical computer packages.

**Course Objectives**

The field of Geography is marked by diversity in subject matter, which includes physical (environmental), human (socio-economic), and integrated (human-physical) topics of inquiry. It is therefore not surprising to learn that there exists a variety of analytical methods which geographers employ. This course serves as an introduction to these analytical approaches, taking you from the collection and presentation of geographic data to analysis and interpretation. The course is targeted for undergraduate students in geography and related disciplines with limited backgrounds in statistical approaches to geographic problem solving. Analytical examples and problem solving will involve the use of statistical computer packages. Students will leave this course with knowledge and experience in 'stats' and an appreciation for how they are applied to geographic issues.

### 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.

<b>Course Learning Outcomes</b>	<b>PLO(s)*</b>	<b>Level(s)**</b>
Distinguish and compare basic data characteristics, concepts, and strategies for preparation and display	<b>3,6</b>	<b>1,2</b>
Distinguish, compare and be able to apply basic descriptive statistics: measures of central tendency, dispersion, shape, etc	<b>3,6</b>	<b>1,2</b>
Explain the probabilistic underpinnings of inferential statistics: basic probability theory, probability distribution functions, problem-solving	<b>3,5,6,7</b>	<b>1,2</b>
Explain and be able to apply the framework for both classical and p-value hypothesis testing	<b>3,6,7</b>	<b>1</b>
Identify and interpret a variety of statistical tests wielded in an inferential, hypothesis-testing framework	<b>3,5,6</b>	<b>1</b>
Apply a variety of descriptive statistics and graphics to Geographic data for the purpose of summarizing the salient ideas	<b>3,5,6,7</b>	<b>1,2</b>
Explain and apply the concept of probability; list probability distribution types; explain components and utility of the normal distribution and central limit theorem	<b>3,6,7</b>	<b>1,2</b>
Explain basic concepts in estimation and apply towards confidence interval generation; probability sampling concepts, types and size selection	<b>3,5,6,7</b>	<b>1</b>
Explain and apply terms and concepts in hypothesis testing; one, two and three or more sample difference of means parametric (and non-) tests; p value	<b>3,5,6,7</b>	<b>1</b>
List, explain and apply inferential categorical difference tests and spatial sampling techniques to geographic data	<b>3,5,6</b>	<b>1</b>
Explain and apply tests appropriate to evaluate the statistical relationship between variables (both parametric and non-parametric tests)	<b>3,5,6,7</b>	<b>1</b>
Describe the basic concepts of simple bivariate regression, and set the stage for more advanced regression analyses in subsequent courses	<b>3,6</b>	<b>1</b>
Explain the concept of multivariate regression, spatial autocorrelation; multicollinearity and residual analysis	<b>3,5,6,7</b>	<b>1</b>
Explain the particular challenges associated with quantitative analysis of spatial data: MAUP, autocorrelation, boundary issues, scale, etc.	<b>3,6,7</b>	<b>1,2</b>

\*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

Computer skills are required. Students will be expected to be able to navigate D2L, use word processing and spreadsheet software (e.g. Microsoft Word and Excel, or similar programs), and to follow instructions for and troubleshoot the statistical software used in the course.

Students will require a non-graphing calculator.

### Course Format

Geog 485 will be delivered synchronously, according to the scheduled timetable. The format of this delivery – in-person, on-line, or blended – may change throughout the term, according to institutional guidance. Announcements will be made throughout the term, as appropriate.

### Learning Resources

Required textbook: An Introduction to Statistical Problem Solving in Geography, 3rd edition by J. Chapman McGrew Jr., A.J. Lembo Jr., and Charles B. Monroe, published by Waveland Press Inc., 2014.

Additional readings, lecture material, video lectures, course information, assignments, and course discussion boards will be posted and available through the course Desire2Learn page online at <https://d2l.ucalgary.ca/d2l/home>. This site will be updated regularly and students are expected to login at least twice weekly to ensure they stay current with the course.

### Assessment Methods

1.	In-class Tests (2 tests, 15% each)	30%
2.	Laboratory Assignments	25%
3.	In-class Assignments/Class Participation	8%
4.	Registrar-scheduled Final Exam	37%

It is not necessary to pass all components to pass the course as whole.

Writing materials and non-graphing calculators are permitted in exams. No other materials or devices are allowed.

Students are not allowed to use any of the following in exams:

- Phones, smartwatches, or wearable technology of any kind
- Portable/handheld computers, tablets, laptops, electronic writing pads
- Models with QWERTY (i.e., typewriter-like) keypads as part of hardware or software (e.g., TI-92 Plus, Voyage 200)
- Models with pen-input/stylus capability (e.g., Palm, PDAs, Casio ClassPad)
- Models with wireless, Bluetooth, or cellular capability
- Models that require an electrical outlet, “talk”\*\* or make noise, or have a paper tape
- Models that can access the internet
- Models that have cell phone capability or audio/video recording or playing capability
- Models that have a camera, scanning capability, or any other smartphone-type features
- Models with touch-screen capability that aren’t on the list of approved graphing calculators (e.g., Casio ClassPad)
- Hardware peripherals such as a stylus, keyboard, or wireless adapter with an approved calculator

The only acceptable reasons for missing an assignment in this class are illness, domestic affliction, or religious conviction. If you miss an assignment or examination for one of these reasons and provide me with the appropriate documentation (see M.1. Supporting Documentation and the Use of a Statutory Declaration in the University of Calgary Calendar) you will have one opportunity to make arrangements for the missed work. Without appropriate documentation, you will receive a zero for that portion of your grade.

Late assignments without prior arrangement will be penalized 10% per day.

**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>

**Additional Course Information**

In the event that a student misses a midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration may be requested <https://www.ucalgary.ca/pubs/calendar/current/m-1.html>  
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.

**Exams & Deferrals**

<https://www.ucalgary.ca/registrar/exams>

**Supplementary Fees**

Not applicable

**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 20<sup>th</sup>, 2022**. The last day to withdraw from this course is **Tuesday, April 12<sup>th</sup>, 2022**. No classes February 20 – 26<sup>th</sup>, 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](http://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](http://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.

### **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. 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](mailto:freeman@ucalgary.ca)).

### **Learning Technologies and Requirements**

In order 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

### **Use of internet and electronic devices in class**

Electronic devices with internet capabilities are permitted – and in some cases even required – in Geog 485. However, use of these devices in a manner that disrupts or distracts students (either yourself or those around you) is not allowed.

Off-task use of technology (e.g., communicating with friends or family; using social networking sites; playing games; accessing the internet on websites that do not relate to the course; reading an electronic book that is not related to the course; playing music or video, etc.) during instruction which are distracting to self or others are not permitted.

### **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.

### **Media Recording**

[https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP\\_FINAL.pdf](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**

Students will need to see lectures (visually) in order to get all of the information.  
YuJa not be used in Geog 485.

### **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](mailto: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](mailto:suvpaca@ucalgary.ca)
- Students Union Representatives for the Faculty of Arts – 403-220-3913, [arts1@su.ucalgary.ca](mailto:arts1@su.ucalgary.ca), [arts2@su.ucalgary.ca](mailto:arts2@su.ucalgary.ca), [arts3@su.ucalgary.ca](mailto:arts3@su.ucalgary.ca), [arts4@su.ucalgary.ca](mailto:arts4@su.ucalgary.ca)
- Student Ombuds Office information can be found at: [www.ucalgary.ca/ombuds/](http://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 for lectures is Professional Faculties Food Court.

The Muster Point for labs is Professional Faculties 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.