



COURSE OUTLINE
Advanced Spatial Analysis

Lecture: Thursdays 14:30 pm – 16:20 pm; CLE A330

Instructor: Jason Kelley

Office Hours: Wednesdays 12:30 pm – 1:30 pm

Office Location: DTB B208

Contact: jkelly@uvic.ca

Lab: Wednesdays 02:30 – 05:20; DTB A249

Lab Instructor: Gill Voss

Office Hour: Tuesdays 10:00 – 11:00; DTB B206

Contact: gillianvoss@uvic.ca

***Instructional staff will answer emails from Monday to Friday between 8:00am and 5:00pm.**

We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

COURSE DESCRIPTION

This course introduces students to a variety of spatial analysis techniques that can be used for understanding geographic phenomena. Topics covered in this course include descriptive spatial analysis, spatial sampling, inferential spatial analysis, and spatial interpolation. Lectures focus on the geographic theory and equations behind each method, while labs provide an opportunity for students to implement a variety of techniques to address questions that are geographic in nature. All labs and exercises are completed using the scientific programming language *R*. Students who successfully complete this course will not only have more analytical tools at their disposal, but will also become versed in spatial analysis discourse, which will allow them to interrogate scientific research employing a range of spatial analytical approaches.

KEY THEMES: Spatial analysis, statistics, programming, communicating science

REQUIRED TEXT(S)

All readings are provided each week on Brightspace

LEARNING OUTCOMES

- Define appropriate spatial analysis methods needed for specific geographical questions.
- Analyze geographic data to characterize spatial patterns of observations and spatial relationships between variables.
- Analyze and interpolate spatial data in order to create continuous surfaces.
- Demonstrate the ability to implement a suitable spatial analytical workflow for providing answers to geographic questions.
- Demonstrate proficiency in using the scientific programming language R to conduct spatial analysis.
- Demonstrate familiarity with spatial analysis language in order to effectively interrogate scientific research employing relevant methods

EVALUATION

Assignment 1	= 10%
Assignment 2	= 15%
Assignment 3	= 20%
Final Project	= 35%
Weekly Activities	= 20%

NOTE: Students will not be given an opportunity to submit any additional work for extra grades.

GRADING SYSTEM

As per the Academic Calendar:

Grade	Grade point value	Grade scale	Description
A+ A A-	9 8 7	90-100% 85-89% 80-84%	Exceptional, outstanding and excellent performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter.
B+ B B-	6 5 4	77-79% 73-76% 70-72%	Very good, good and solid performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one area balanced with satisfactory grasp in the other area.
C+ C	3 2	65-69% 60-64%	Satisfactory, or minimally satisfactory. These grades indicate a satisfactory performance and knowledge of the subject matter.
D	1	50-59%	Marginal Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.
F	0	0-49%	Unsatisfactory performance. Wrote final examination and completed course requirements; no supplemental.
N	0	0-49%	Did not write examination or complete course requirements by the end of term or session; no supplemental.

GEOGRAPHY DEPARTMENT INFO

- Geography Department website: uvic.ca/socialsciences/geography/
- Geography Department Chair: geogchair@uvic.ca
- Geography Undergraduate Advising: geogadvising@uvic.ca

BRIGHTSPACE

<https://bright.uvic.ca/d2l/home/422946>

POLICY ON LATE ASSIGNMENTS

Assignments will be accepted up to two days (48 hours) after the due date with no penalty. Except in cases where the instructor has previously approved a deferral, assignments submitted after this time will receive a grade of 0.

ACADEMIC INTEGRITY

It is every student's responsibility to be aware of the university's policies on academic integrity, including policies on **cheating, plagiarism, unauthorized use of an editor, multiple submission, and aiding others to cheat.**

Policy on Academic Integrity: web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html

If you have any questions or doubts, talk to me, your course instructor. For more information, see uvic.ca/learningandteaching/cac/index.php.

USE OF AI

In this course, you are limitedly authorized to make the use of generative AI such as Microsoft Co-Pilot or ChatGPT. This is limited to the coding portions of your assignments where you can work together with generative AI for debugging your code. I recommend the use of Microsoft Co-Pilot as you have access to this for free through your UVic Netlink account (<https://copilot.cloud.microsoft/>). We will discuss how to ethically use generative AI in class. For the writing portions of this course, please refrain from using any generative AI. Please note that you can opt for not using generative AI at all to successfully complete all the course's requirements.

ACCESSIBILITY

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability or health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL) as soon as possible (uvic.ca/services/cal/). The CAL staff are available by appointment to assess specific needs, provide referrals, and arrange appropriate accommodations. The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course.

POSITIVITY AND SAFETY

The University of Victoria is committed to promoting, providing and protecting a positive and safe learning and working environment for all its members.

SEXUALIZED VIOLENCE RESOURCE OFFICE (SVRO)

If you have been directly or indirectly impacted by sexualized violence, reach out to the SVRO for information, advice, resolution options (restorative and disciplinary) as well as support options and referrals. The SVRO is both survivor-centred and trauma-informed in their approach.

eqhr01@uvic.ca

Sedgewick C Wing

www.uvic.ca/svp

EQUITY AND HUMAN RIGHTS (EQHR)

UVic Equity and Human Rights is a resource for students, staff and faculty who have experienced discrimination and harassment and are looking for informal and formal resolution options as well as advice, coaching and/or education. We are available for confidential consultations so that you can ask questions and learn your options.

eqhr01@uvic.ca

Sedgewick C Wing

www.uvic.ca/equity

RESOURCES FOR INTERNATIONAL STUDENTS

The University of Victoria offers a number of resources to support international students as they pursue their studies. UVic's [International Centre for Students](#) is the primary office supporting international students on campus at the university-wide level and provides various supportive program through the [UVic Global Community Initiative](#), including a Mentorship Program and Conversation Partner Program. For academic advising-related questions, students in the Geography Department are also encouraged to meet with the Geography Undergraduate Advisor (geogadvising@uvic.ca) as well as an academic advisor in the [Academic Advising Centre](#) early in their studies to help map out a plan to declare a major and complete university program requirements. Other resources include the [Centre for Academic Communication](#) and the [Math and Stats Assistance Centre](#). International students are also encouraged to contact the International Student Liaison in Geography (Prof. CindyAnn Rose-Redwood, cindyann@uvic.ca), who can assist in making connections with other international and domestic students in the Geography Department and share opportunities for getting involved in departmental activities more broadly.

COURSE EXPERIENCE SURVEY (CES)

I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous survey regarding your learning experience (CES). The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. The survey is accessed online and can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.

WEEKLY CALENDAR

WEEK	DATE	Topic
1	September 4 th	Descriptive and Spatial Statistics
2	September 11 th	Inferential Statistics
3	September 16 th	Last day for 100% reduction of second term fees for dropped courses
3	September 18 th	Point Pattern Analysis I
3	September 19 th	Last day for adding courses that begin in the second term

4	September 25 th	Point Pattern Analysis II
5	October 2 nd	Spatial Autocorrelation I
6	October 9 th	Spatial Autocorrelation II
7	October 16 th	Spatial Interpolation I
8	October 23 rd	Spatial Interpolation II
9	October 30 th	Geographic Weighted Regression
9	October 31 st	Last day for withdrawing from full year and second term courses without penalty of failure
10	November 6 th	Final Project Planning
11	November 13 th	Final Project Work Period
12	November 20 th	Communicating Spatial Research
13	November 27 th	Final Project Assistance

ASSIGNMENT DEADLINES

Assignment 1 (10%)	Sunday, September 21 @ 11:59 pm
Assignment 2 (15%)	Sunday, October 5 @ 11:59 pm
Assignment 3 (20%)	Sunday, October 19 @ 11:59 pm
Final Project (35%)	Monday, December 1 @ 11:59 pm

DISCLAIMER

The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances.

NOTE:

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

Counselling Services - *Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students.* uvic.ca/services/counselling/

Health Services - *University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives.* uvic.ca/services/health/

Centre for Accessible Learning - *The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations* uvic.ca/services/cal/. *The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.*

Elders' Voices - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being.*
uvic.ca/services/indigenous/students/programming/elders/index.php