



**University
of Victoria**

GEOGRAPHY 418
UNIVERSITY OF VICTORIA
Fall Term 2026
Dr. Jessica Neal

COURSE OUTLINE
ADVANCED SPATIAL ANALYSIS

Lecture: Fridays 9:30am to 11:20am; DSB C108

Instructor: Dr. Jessica Neal

Office Hours: Tuesdays 2:30pm to 4:30pm

Office Location: DTB A243

Contact: jlaura@uvic.ca

Lab: Wednesdays 14:30 – 05:20 A249; Thursdays 8:30am to 11:20am A251

Lab Instructor: Ben Milligan

Office Hour: TBA

Contact: bmilligan@uvic.ca

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

We acknowledge and respect the lək'wəḡən 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 spatial analysis techniques that can be used for understanding geographic data. Topics of focus include descriptive statistics, sampling design, inferential spatial analysis, interpolation, and spatial modelling. Lectures focus geographic theory, methods, and application, while the labs provide practical application of techniques to address spatial questions. All labs and exercises are completed using the scientific programming language R. Successful completion of this course will provide students with analytical tools to address scientific research by 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 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 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.
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GEOGRAPHY DEPARTMENT INFO

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

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 to debug 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 course requirements.

ACCESSIBILITY

Students with diverse learning styles and needs are welcome in this course. If you have a documented disability or health consideration that may require accommodation, 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 accommodation. Please let us know your needs as soon as possible so we can help you achieve 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 environments 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-centered 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)

We 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 think about this important activity during the course.

WEEKLY CALENDAR ((Subject to change))

WEEK	DATE	Topic
1	September 11 th	Descriptive and Spatial Statistics
2	September 18 th	Inferential Statistics and Spatial Data (September 17 th - Last day for 100% reduction of second term fees for

		dropped courses)
3	September 25 th	Point Pattern Analysis I
4	October 2 nd	Point Pattern Analysis II
5	October 9 th	Spatial Autocorrelation I
6	October 16 th	Spatial Autocorrelation II
7	October 23 rd	Spatial Interpolation I
8	October 30 th	Spatial Interpolation II
9	November 6 th	Spatial Regression (October 31 st - Last day for withdrawing from first term courses without penalty of failure)
10	November 13 th	Reading Break
11	November 20 th	Final Project Planning
12	November 27 th	Communicating Spatial Research
13	December 4 th	Final Project Work Period
14	December 7 th	Last day of classes (no scheduled lecture this week)

ASSIGNMENT DEADLINES (Subject to change)

Assignment 1 (10%) Sunday, September 27th @ 11:59 pm
Assignment 2 (15%) Sunday, October 11th @ 11:59 pm
Assignment 3 (20%) Sunday, November 1st @ 11:59 pm
Final Project (35%) Sunday, December 6th @ 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