University of Victoria

GEOGRAPHY 418 - A01
UNIVERSITY OF VICTORIA
FALL TERM 2023
JASON KELLEY

COURSE OUTLINE
ADVANCED SPATIAL ANALYSIS

Instructor: Jason Kelley
Office Hours: Wednesdays 11:00 am – 12:00 pm and by appointment
Office Location:
Contact: jkelley@uvic.ca

Teaching Assistant: Gillian Voss
Office Hour: Monday 2:30 – 3:30 pm DTB B206
Contact: gillianvoss@uvic.ca
***** ***Please note that we only respond to emails during 8:00am to 5:00pm Mondays to Fridays***

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, science communication

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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

Reading Quizzes	10%
Assignment 1: Spatial Sampling and Descriptive Statistics	10%
Assignment 2: Event-based Observations and Point Pattern Analysis	20%
Assignment 3: Spatial Interpolation	25%
Final Project: Vulnerability to Natural Disasters	35%

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

Brightspace learning management systems (LMS) will serve as the main avenue of communication (https://bright.uvic.ca/). Please monitor the page on a regular basis for course announcements. If you are having difficulty logging in or password problems, contact the Computer Help Desk Email: helpdesk@uvic.ca, Tel: 250-721-7687

POLICY ON LATE ASSIGNMENTS

Assignments will be accepted one day (24 hours) past the due date, accompanied by a late penalty. Late penalties will be assigned as 2.5% (<= 1 hour), 5% (<= 12 hours), 10% (<= 24 hours). Assignments will not be accepted after 24 hours.

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.

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 is 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 PREVENTION AND RESPONSE AT UVIC

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

Where: Sexualized violence resource office in EQHR; Sedgewick C119
Phone: 250.721.8021
Email: svpcoordinator@uvic.ca
Web: uvic.ca/svp

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 the 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	Lab (Wed)	Lecture (Thurs)	Due
1 – Sept 07	No Labs	Spatial Sampling	
2 – Sept 14	Intro to R/ Spatial Sampling	Field Day	
3 – Sept 21	Descriptive Statistics	Spatial Descriptive Statistics	Quiz 1 – Sept 24
4 – Sept 28	Point Pattern I	Point Pattern Analysis I	Lab 1 – Sept 26
5 – Oct 05	Point Pattern II	Point Pattern Analysis II	Quiz 2 – Oct 08

6 – Oct 12	Spatial Interpolation I	Spatial Interpolation I	Lab 2 – Oct 10
7 – Oct 19	Spatial Interpolation II	Spatial Interpolation II	
8 – Oct 26	Spatial Interpolation III	Scientific Writing	Quiz 3 – Oct 29
9 – Nov 2	Spatial Autocorrelation/ Final Project	Spatial Autocorrelation/ Final Project Scoping	Lab 3 – Oct 31
10 – Nov 9	Final Project	Group Meetings	Quiz 4 – Nov 12
11 – Nov 16	No Labs	Final Project Open Questions	
12 – Nov 23	Final Project	Communicating Spatial Research	
13 – Nov 30	Final Project	Presentations	Final Project – Nov 30

Important Dates

September 19: Last day for dropping courses with 100% fee reduction
September 22: Last day for adding courses
October 10: Last day for dropping courses with 50% fee reduction
October 31: Last day for withdrawing from courses without failure
November 13-15: Reading break

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