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**COURSE OUTLINE**  
**Advanced Spatial Analysis and Geostatistics**

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<b>Contact:</b>	<a href="mailto:fargey@uvic.ca">fargey@uvic.ca</a> or 250-721-7342	
<b>Office Location:</b>	DTB B308	
<b>Office Hours:</b>	Tuesdays 2:30 to 3:30 pm, Fridays 9:30 am to 12:00 pm <i>or by appointment</i>	
<b>Class Meetings:</b>	Tuesdays and Wednesdays 1:30 to 2:20 pm Location: David Strong Building, C108	
<b>Lab Information:</b>	B01 2:30 to 5:20 pm Thursday B02 6:30 to 9:20 pm Thursday	<i>TA information posted on CourseSpaces</i>

**COURSE DESCRIPTION**

In this course students will have an opportunity to gain theoretical and applied experience in spatial statistics and advanced geographical analysis. Topics include: point pattern analysis, areal data analysis and spatial autocorrelation and geostatistics (i.e., variograms and kriging). Labs and a final project are designed to provide students with hands on experience applying theory to a range of data sets and to a data set selected by the student.

Pre-requisite: GEOG 328 or 329

*It is strongly recommended that students have completed both 328 and 329 prior to taking this course.*

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**LEARNING OUTCOMES**

1. Gain a theoretical and applied experience in spatial statistics
  2. Gain a theoretical and applied experience in advanced geographical analysis
  3. Perform unique and independent research in Geography
  4. Become familiar with challenges of using geographic data
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**REQUIRED TEXTS**

The majority of your readings will come from a required textbook. A first edition of the textbook is acceptable, however assigned readings (pages and chapters) will reference the second edition only. If you use an older edition, you are responsible for matching content between books. Additional readings and learning resources - typically peer-reviewed literature - will be provided throughout the course.

O'Sullivan, D. and D.J. Unwin. 2010. *Geographic Information Analysis* (2<sup>nd</sup> ed). John Wiley & Sons, New Jersey.

## EVALUATION

Laboratory Assignments x 4 (10% each)	40%
Term Research Project:	
Proposal	6%
Poster Presentation	40%
Participation (poster sessions 1% each day)	4%
Final Exam (Nov 29 in-class)	10%

## GRADING SYSTEM

As per the Academic Calendar:

Grade	Grade point value	Grade scale	Description
<b>A+</b> <b>A</b> <b>A-</b>	9 8 7	90-100% 85-89% 80-84%	<b>Exceptional, outstanding and excellent</b> 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> <b>B</b> <b>B-</b>	6 5 4	77-79% 73-76% 70-72%	<b>Very good, good and solid</b> 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.
<b>C+</b> <b>C</b>	3 2	65-69% 60-64%	<b>Satisfactory, or minimally satisfactory.</b> These grades indicate a satisfactory performance and knowledge of the subject matter.
<b>D</b>	1	50-59%	<b>Marginal</b> Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.
<b>F</b>	0	0-49%	<b>Unsatisfactory</b> performance. Wrote final examination and completed course requirements; no supplemental.
<b>N</b>	0	0-49%	Did not write examination or complete course requirements by the end of term or session; no supplemental.

## GEOGRAPHY DEPARTMENT INFORMATION

Geography Department website: <http://geog.uvic.ca>

Undergraduate Advisor: Dr. Phil Wakefield [geogadvisor@uvic.ca](mailto:geogadvisor@uvic.ca)

Department Chair: Dr. Johan Feddema [geogchair@uvic.ca](mailto:geogchair@uvic.ca)

## COURSESPACES

CourseSpaces learning management systems (LMS) will serve as the main avenue of communication (<http://coursespaces.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](mailto:helpdesk@uvic.ca), Tel: 250-721-7687

## IMPORTANT COURSE POLICIES

A high level of student cooperation and participation, involving asking and answering questions is expected. Students are expected to attend all lectures, take notes and be punctual for class.

Cell phones and portable music players must be **turned off or silenced** during lectures.

Topic handouts based on lecture presentations will be provided before the beginning of class meetings on CourseSpaces. These handouts will be removed **7 days** after the posting date. Students are responsible for downloading/saving and completing notes packages. *If you miss any material, make arrangements to get handouts from a fellow student, not from the instructor.*

**Students must complete all evaluation components to obtain credit.** Failure to complete an any evaluation component without permission from the instructor, will result in an 'N' grade, which equals a Grade Point Value of 0.

Students will not be permitted to write make-up tests except for documented medical or compassionate reasons. Please inform the instructor of your situation promptly and present written proof within five working days. Any make-up test or examination may not follow the same format as the in-class one.

Lab assignments are due at the beginning of your lab section, thereafter late penalties will be applied.

Late assignments will be penalized **20% per day** (including weekends and holidays). Exceptions will only be granted for documented medical or compassionate reasons. Written proof must be provided within five working days. *Only the course instructor can grant exceptions.*

Details regarding your labs and their marks are managed by the course TAs. Please discuss any issues or questions on labs with your TA first.

Please attend only the laboratory section for which you are registered. If you must miss a lab for exceptional circumstances, please make arrangements with your TA in advance to attend another section. This however does not change the due date of your lab assignment.

Conflicts with holidays or travel plans are not considered an acceptable reason to apply for a deferred examination or an assignment extension.

Unless otherwise stated students are expected to complete assignments **independently**.

## PLAGIARISM

Academic dishonesty (plagiarism, cheating) is a very serious matter in any academic institution and is dealt with severely at the University of Victoria. *The responsibility of the institution:* Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing

so, the institution recognizes students for their hard work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects. *The responsibility of the student:* Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are unsure about the standards for citations or for referencing your sources, ask your instructor.

Infractions will be dealt with in accordance with University policy. Commonly, the penalty for any form of cheating/plagiarism is a grade of F on the tests or laboratory assignments, or a final grade of F in the course. However, depending on the severity of the case other penalties may include a record on the student's transcript or expulsion.

Please familiarize yourself with the University policy on academic integrity found in the Undergraduate Calendar at the following website. Please contact me if you have any questions.

<http://www.uvic.ca/learningandteaching/students/resources/expectations/>

## **ACCESSIBILITY**

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability/health consideration that may require accommodations, please feel free to approach me and/or the Resource Centre for Students with a Disability (RCSD) as soon as possible. The RCSD staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations <http://rcsd.uvic.ca/>. 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. To ensure that all class members feel welcomed and equally able to contribute to class discussions, we will all endeavour to be respectful in our language, our examples, and the manner in which we conduct our discussions and group work. If you have any concerns about the climate of the class, please contact me.

## **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 via MyPage 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.

## Tentative Schedule

Week	Dates	Topics	Lab
1	Sept 5-9	Introduction and Review	No lab
2	Sept 12-16	Point Pattern Analysis	No lab
3	Sept 19-23	Spatial Autocorrelation	Lab 1
4	Sept 26-30	Interpolation & trend surface analysis	Lab 2 (Lab 1 due)
5	Oct 3-7	Geostatistics	Lab 3 (Lab 2 due)
6	Oct 10-14	Spatial & geographically weighted regression	Lab 4 (Lab 3 due)
7	Oct 17-21	Hot spot analysis & Special Topics	Lab 4 Due, Project work
8	Oct 24-28	Special Research topics	Project work
9	Oct 31-Nov 4	Project work	
10	Nov 7-11	Project work, <i>Reading break</i>	
11	Nov 14-18	Project Presentations	
12	Nov 21-25	Project Presentations	
13	Nov 28-Dec 2	Final Exam (Nov 29), No class (Nov 30)	

### Important Dates Summary

	Date Assigned	Due Date
<i>Laboratory Assignments</i>		
Lab 1 – Point Pattern Analysis	Sept 22	Sept 29
Lab 2 – Interpolation and Trend Surface Analysis	Sept 29	Oct 6
Lab 3 – Geostatistics	Oct 6	Oct 13
Lab 4 – Spatial Regression	Oct 13	Oct 20
<i>Term Project</i>		
Project Proposal		Oct 25 (end of day)
Project Poster Presentations		Nov 15 – Nov 23

*Final Exam* November 29<sup>th</sup> in-class

October 31<sup>st</sup> – Last day for withdrawing from term courses without penalty of failure

November 9 to 11<sup>th</sup> – Reading Break