

**Department of Geography – University of Victoria**  
**Geography 418 – Advanced Spatial Analysis**

September 2015

**Instructor**

Dr. Trisalyn Nelson (trisalyn@uvic.ca)  
Tel: 472-5620; Office: DTB A237  
Office hours: Tuesday 2:30-3:30

**Lectures**

Tuesday and Wednesday 1:30 - 2:20pm  
CLE A 302

**Teaching Assistant**

Robin Kite robinkite@gmail.com

**Lab**

DTB A251  
See Moodle

**Learning Objectives**

The goals of this course are for students to gain theoretical and applied experience in spatial statistics and advanced geographical analysis. Theoretical understanding will be emphasized through lectures and readings. Labs and a final project are designed to provide students with hands on experience applying theory to a range of data sets.

**Textbook**

O'Sullivan, D. and Unwin, D.J. 2003. Geographic Information Analysis. John Wiley & Sons, New Jersey.

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

**Evaluation**

Labs = 45%

Participation = 5%

Final Project = 50%

A+	A	A-	B+	B	B-	C+	C	D	F
90-100%	85-89%	80-84%	77-79%	73-76%	70-72%	65-69%	60-64%	50-59%	<49%

### Undergraduate Grading\*\*

<i>Passing Grades</i>	<i>Description</i>
A+ A A-	<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>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.
C+ C	<b>Satisfactory, or minimally satisfactory.</b> These grades indicate a satisfactory performance and knowledge of the subject matter.
D	<b>Marginal Performance.</b> A student receiving this grade demonstrated a superficial grasp of the subject matter.
COM	<b>Complete</b> (pass). Used only for 0-unit courses and those credit courses designated by the Senate. Such courses are identified in the course listings.

\*\* As per stated in the 2014-2015 Calendar

#### **Late Policy**

10% will be deducted for every day late. Exceptions will only be granted for medical reasons (requiring a written note from a medical practitioner stating your inability to attend class) or other extreme personal crises. Only the course instructor can grant exceptions. Please do not try and negotiate exceptions with your TA.

#### **Lab Access Policy**

Access to the Geomatics Laboratory is restricted for security purposes. You are required to purchase an entry card, which will enable you to gain access to that facility anytime that Cornett Building is open and classes are not in progress. The cost of a card is \$20.00. A \$15 refund will be issued at the end of the semester on the return of the card, if the card is returned by the last day of class.

If you lose your card a \$10 charge will be charged for a replacement. Cards will only be available for purchase during the 1<sup>st</sup> two weeks of semester at posted times. You will also be required at time of purchase to sign that you have read and will follow the Geomatics Teaching Laboratory's rules and guidelines for appropriate use.

#### **Class Climate**

UVic has made a conscientious effort to increase diversity in the student, staff and faculty member populations. 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.

## Academic Standards

Plagiarism will be dealt with in accordance with university policy. Please review calendar for details. Be sure and reference all material you use. If you have any questions, please contact me.

## Students with a Disability

If you have any type of disability, there are support systems, resources, and accommodation actions available to you. If you wish to access any of these supports, resources or accommodations, I encourage you to contact the Resource Centre for Students with a Disability (<http://www.stas.uvic.ca/osd/home.ihtml>) and I would be more than happy to work with you to ensure your success in this course. Please Note: You are under no obligation to disclose your disability.

## Class Schedule – Subject to change

Date	Labs	Lecture	Title	Readings
09-Sep		1	Introduction	Chapter 2
15-Sep		2	Spatial pattern and process	Chapter 4
16-Sep		3	Point Pattern Analysis 1	Chapter 5
22-Sep	Lab1	4	Statistics Review	Appendix A
23-Sep	Lab1	5	Point Pattern Analysis 2	Chapter 6
29-Sep	Lab1	6	Randomization	Fortin, M. J., & Jacquez, G. M. (2000). Randomization tests and spatially auto-correlated data. <i>Bulletin of the Ecological Society of America</i> , 81(3), 201-205.
30-Sep	Lab1	7	Joint counts and Categorical Data	Boots, B. (2003). Developing local measures of spatial association for categorical data. <i>Journal of Geographical Systems</i> , 5(2), 139-160.
06-Oct	Lab2	8	No Class	
07-Oct	Lab2	9	Quantitative spatial autocorrelation	Chapter 7, 8.1-8.4
13-Oct	Lab2	10	Spatial neighbourhoods	Chapter 2.3
14-Oct	Lab2	11	Hot spots	Nelson, T. A., & Boots, B. (2008). Detecting spatial hot spots in landscape ecology. <i>Ecography</i> , 31(5), 556-566.
20-Oct		12	Geostatistics	Chapter 9
21-Oct		13	Modelling Biodiversity	Fitterer, J. L., Nelson, T. A., Coops, N. C., & Wulder, M. A. (2012). Modelling the ecosystem indicators of British Columbia using Earth observation data and terrain indices. <i>Ecological Indicators</i> , 20, 151-162.
27-Oct		14	Space-Time/Movement	

28-Oct		15	MAUP	Jelinski, D. E., & Wu, J. (1996). The modifiable areal unit problem and implications for landscape ecology. <i>Landscape ecology</i> , 11(3), 129-140.
3-Nov		16	Trends	Nelson, T. A. (2012). Trends in spatial statistics. <i>The Professional Geographer</i> , 64(1), 83-94.
4-Nov		17	Project Prep	
10-Nov		18	Reading week	
11-Nov		19	Reading week	
17-Nov		20	Presentations	
18-Nov		21	Presentations	
24-Nov		22	Presentations	
25-Nov		23	Presentations	
01-Dec		24	Presentations	
02-Dec		25	Presentations	

**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 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.

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

## 418 Term Project

The goal of the term project is to provide students with an opportunity to apply advanced spatial analysis techniques (learned in the course) to a research question of their choice. In total, the term project is worth 50% of your mark.

### Part 1 – Proposal

Mark weighting - 5% of overall mark  
Length ~2 pages

The focus of the proposal is to ensure that you have identified a suitable research question, have obtained data, and are starting to read the pertinent literature. Please include:

- A short literature review that demonstrates why your question is important (1/2 page)
- A clear research question
- Suggest preliminary methods
- Identify potential issues
- Indicate source of data

### Part 2 – Written Report

Mark weighting - 30% of overall mark  
Length ~10 pages of text

### Part 3 – Oral Presentation

Mark weighting - 15% of overall mark

Your final results will be presented to the class in a Pecha Kucha format presentation. Pecha Kucha format restrictions are that you present 20 slides, that are each displayed for 20 seconds. Minimal text and lots of graphics. Each Pecha Kucha presentation will be 6 minutes and 40 seconds in length. There will be 2 minutes for questions. Your PPT presentations should be set up to flip slides automatically.

In your presentation include:

Project context  
Project Goal  
Data and Study Area Description  
Methods  
Results and Discussion  
Conclusions

### Due Dates

Proposal: Nov 3<sup>rd</sup>  
Final Paper: November 25<sup>th</sup>  
Presentation: TBD

### Something Fun!

I challenge you to do something creative with spatial statistics. Play a song, write a poem, interpretive dance a concept, do an art project... Whatever your medium, show up to a class (between Sept and Nov 3<sup>rd</sup>) with creative spatial statistics entertainment and I will bump your lowest lab mark by 10%.